## PCT/US03/18923

## WO 03/106645

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## SEQUENCE LISTING

|                                  | BIGGINGS BISTING   |     |
|----------------------------------|--|-----|
| <110>                            | Isis Pharmaceuticals, Inc.   |     |
| <120>                            | Antisense Modulation Of SMRT Expression  |     |
| <130>                            | ISPT1004   |     |
|                                  | 10/174,014<br>2002-06-17   |     |
| <160>                            | 75   |     |
| <170>                            | PatentIn version 3.2   |     |
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| gtgag                            | ctgat gacgaggact ggcttttaat ccttggtggt gattaagaga aagcttattg                                 | 120 |
| gggcc                            | tggga gcagctcccc gccgaccccc accacc atg tcg ggc tcc aca cag<br>Met Ser Gly Ser Thr Gln<br>1 5 | 174 |
| cct g                            | tg gca cag acg tgg agg gcc act gag ccc cgc tac ccg ccc cac<br>Page 1                         | 222 |

| Pro               | Val               | Ala               | Gln<br>10         | Thr               | Trp               | Arg               | Ala               | Thr<br>15         | Glu               | Pro               | Arg               | Tyr               | Pro<br>20         | Pro               | His               |      |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| agc<br>Ser        | ctt<br>Leu        | tcc<br>Ser<br>25  | tac<br>Tyr        | cca<br>Pro        | gtg<br>Val        | cag<br>Gln        | atc<br>Ile<br>30  | gcc<br>Ala        | cgg<br>Arg        | acg<br>Thr        | cac<br>His        | acg<br>Thr<br>35  | gac<br>Asp        | gtc<br>Val        | G1A<br>Gaa        | 270  |
| ctc<br>Leu        | ctg<br>Leu<br>40  | gag<br>Glu        | tac<br>Tyr        | cag<br>Gln        | cac<br>His        | cac<br>His<br>45  | tcc<br>Ser        | cgc<br>Arg        | gac<br>Asp        | tat<br>Tyr        | gcc<br>Ala<br>50  | tcc<br>Ser        | cac<br>His        | ctg<br>Leu        | tcg<br>Ser        | 318  |
| ccc<br>Pro<br>55  | ggc<br>Gly        | tcc<br>Ser        | atc<br>Ile        | atc<br>Ile        | cag<br>Gln<br>60  | ccc<br>Pro        | cag<br>Gln        | cgg<br>Arg        | cgg<br>Arg        | agg<br>Arg<br>65  | ccc<br>Pro        | tcc<br>Ser        | ctg<br>Leu        | ctg<br>Leu        | tct<br>Ser<br>70  | 366  |
| gag<br>Glu        | ttc<br>Phe        | cag<br>Gln        | ccc<br>Pro        | ggg<br>Gly<br>75  | aat<br>Asn        | gaa<br>Glu        | cgg<br>Arg        | tcc<br>Ser        | cag<br>Gln<br>80  | gag<br>Glu        | ctc<br>Leu        | cac<br>His        | ctg<br>Leu        | cgg<br>Arg<br>85  | cca<br>Pro        | 414  |
| gag<br>Glu        | tcc<br>Ser        | cac<br>His        | tca<br>Ser<br>90  | tac<br>Tyr        | ctg<br>Leu        | ccc<br>Pro        | gag<br>Glu        | ctg<br>Leu<br>95  | GJ Å<br>GG Å      | aag<br>Lys        | tca<br>Ser        | gag<br>Glu        | atg<br>Met<br>100 | gag<br>Glu        | ttc<br>Phe        | 462  |
| att<br>Ile        | gaa<br>Glu        | agc<br>Ser<br>105 | aag<br>Lys        | cgc<br>Arg        | cct<br>Pro        | cgg<br>Arg        | cta<br>Leu<br>110 | gag<br>Glu        | ctg<br>Leu        | ctg<br>Leu        | cct<br>Pro        | gac<br>Asp<br>115 | ccc<br>Pro        | ctg<br>Leu        | ctg<br>Leu        | 510  |
| cga<br>Arg        | ccg<br>Pro<br>120 | tca<br>Ser        | ccc<br>Pro        | ctg<br>Leu        | ctg<br>Leu        | gcc<br>Ala<br>125 | acg<br>Thr        | ggc<br>Gly        | cag<br>Gln        | cct<br>Pro        | gcg<br>Ala<br>130 | gga<br>Gly        | tct<br>Ser        | gaa<br>Glu        | gac<br>Asp        | 558  |
| ctc<br>Leu<br>135 | acc<br>Thr        | aag<br>Lys        | gac<br>Asp        | cgt<br>Arg        | agc<br>Ser<br>140 | ctg<br>Leu        | acg<br>Thr        | ggc<br>Gly        | aag<br>Lys        | ctg<br>Leu<br>145 | gaa<br>Glu        | ccg<br>Pro        | gtg<br>Val        | tct<br>Ser        | ccc<br>Pro<br>150 | 606  |
| ccc<br>Pro        | agc<br>Ser        | ccc<br>Pro        | ccg<br>Pro        | cac<br>His<br>155 | act<br>Thr        | gac<br>Asp        | cct<br>Pro        | gag<br>Glu        | ctg<br>Leu<br>160 | gag<br>Glu        | ctg<br>Leu        | gtg<br>Val        | ccg<br>Pro        | cca<br>Pro<br>165 | cgg<br>Arg        | 654  |
| ctg<br>Leu        | tcc<br>Ser        | aag<br>Lys        | gag<br>Glu<br>170 | gag<br>Glu        | ctg<br>Leu        | atc<br>Ile        | cag<br>Gln        | aac<br>Asn<br>175 | atg<br>Met        | gac<br>Asp        | cgc<br>Arg        | gtg<br>Val        | gac<br>Asp<br>180 | cga<br>Arg        | gag<br>Glu        | 702  |
| atc<br>Ile        | acc<br>Thr        | atg<br>Met<br>185 | Val               | gag<br>Glu        | cag<br>Gln        | cag<br>Gln        | atc<br>Ile<br>190 | Ser               | aag<br>Lys        | ctg<br>Leu        | aag<br>Lys        | aag<br>Lys<br>195 | aag<br>Lys        | cag<br>Gln        | caa<br>Gln        | 750  |
| cag<br>Gln        | ctg<br>Leu<br>200 | Glu               | gag<br>Glu        | gag<br>Glu        | gct<br>Ala        | gcc<br>Ala<br>205 | aag<br>Lys        | ccg<br>Pro        | ccc<br>Pro        | gag<br>Glu        | cct<br>Pro<br>210 | Glu               | aag<br>Lys        | ccc<br>Pro        | gtg<br>Val        | 798  |
| tca<br>Ser<br>215 | Pro               | ccg<br>Pro        | ccc<br>Pro        | atc<br>Ile        | gag<br>Glu<br>220 | tcg<br>Ser        | aag<br>Lys        | cac<br>His        | cgc<br>Arg        | agc<br>Ser<br>225 | Leu               | gtg<br>Val        | cag<br>Gln        | atc<br>Ile        | atc<br>Ile<br>230 | 846  |
| tac<br>Tyr        | gac<br>Asp        | gag<br>Glu        | aac<br>Asn        | cgg<br>Arg<br>235 | Lys               | aag<br>Lys        | gct<br>Ala        | gaa<br>Glu        | gct<br>Ala<br>240 | Ala               | cat<br>His        | cgg<br>Arg        | att<br>Ile        | ctg<br>Leu<br>245 | gaa<br>Glu        | 894  |
| ggc<br>Gly        | ctg<br>Leu        | ggg               | Pro<br>250        | Gln               | gtg<br>Val        | gag<br>Glu        | ctg<br>Leu        | ccg<br>Pro<br>255 | Leu               | tac<br>Tyr        | aac<br>Asn        | cag<br>Gln        | ccc<br>Pro<br>260 | Ser               | gac<br>Asp        | 942  |
| acc<br>Thr        | cgg<br>Arg        | cag<br>Gln<br>265 | Туг               | cat<br>His        | gag<br>Glu        | aac<br>Asn        | ato<br>Ile<br>270 | Lys               | ata<br>Ile        | aac<br>Asn        | cag<br>Glr        | gcg<br>Ala<br>275 | . Met             | cgg<br>Arg        | ı aag<br>ı Lys    | 990  |
| aag<br>Lys        | cta<br>Leu<br>280 | ılle              | ttg<br>Lev        | tac<br>Tyr        | ttc<br>Phe        | aag<br>Lys<br>285 | Arg               | ı agg             | aat<br>Asn        | cac<br>His        | gct<br>Ala<br>290 | Arc               | g aaa<br>g Lys    | caa<br>Gln        | tgg<br>Trp        | 1038 |

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| gag<br>Glu<br>295       | cag<br>Gln        | aag<br>Lys        | ttc<br>Phe        | tgc<br>Cys        | cag<br>Gln<br>300 | cgc<br>Arg        | tat<br>Tyr        | gac<br>Asp        | cag<br>Gln        | ctc<br>Leu<br>305 | atg<br>Met        | gag<br>Glu        | gcc<br>Ala        | tgg<br>Trp        | gag<br>Glu<br>310 | TARP |
|-------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| aag<br>Lys              | aag<br>Lys        | gtg<br>Val        | gag<br>Glu        | cgc<br>Arg<br>315 | atc<br>Ile        | gag<br>Glu        | aac<br>Asn        | aac<br>Asn        | ccc<br>Pro<br>320 | cgg<br>Arg        | cgg<br>Arg        | cgg<br>Arg        | gcc<br>Ala        | aag<br>Lys<br>325 | gag<br>Glu        | 1134 |
| agc<br>Ser              | aag<br>Lys        | gtt<br>Val        | cgc<br>Arg<br>330 | gag<br>Glu        | tac<br>Tyr        | tac<br>Tyr        | gag<br>Glu        | aag<br>Lys<br>335 | cag<br>Gln        | ttc<br>Phe        | cct<br>Pro        | gag<br>Glu        | atc<br>Ile<br>340 | cgc<br>Arg        | aag<br>Lys        | 1182 |
| cag<br>Gln              | cgc<br>Arg        | gag<br>Glu<br>345 | ctg<br>Leu        | cag<br>Gln        | gag<br>Glu        | cgc<br>Arg        | atg<br>Met<br>350 | cag<br>Gln        | agg<br>Arg        | gtg<br>Val        | ggc<br>Gly        | cag<br>Gln<br>355 | cgg<br>Arg        | ggc<br>Gly        | agt<br>Ser        | 1230 |
| GTA<br>aaa <sub>,</sub> | ctg<br>Leu<br>360 | tcc<br>Ser        | atg<br>Met        | tcg<br>Ser        | ccc<br>Pro        | gcc<br>Ala<br>365 | cgc<br>Arg        | agc<br>Ser        | gag<br>Glu        | cac<br>His        | gag<br>Glu<br>370 | gtg<br>Val        | tca<br>Ser        | gag<br>Glu        | atc<br>Ile        | 1278 |
| atc<br>Ile<br>375       | gat<br>Asp        | ggc<br>Gly        | ctc<br>Leu        | tca<br>Ser        | gag<br>Glu<br>380 | cag<br>Gln        | gag<br>Glu        | aac<br>Asn        | ctg<br>Leu        | gag<br>Glu<br>385 | aag<br>Lys        | cag<br>Gln        | atg<br>Met        | cgc<br>Arg        | cag<br>Gln<br>390 | 1326 |
| ctg<br>Leu              | gcc<br>Ala        | gtg<br>Val        | atc<br>Ile        | ccg<br>Pro<br>395 | ccc<br>Pro        | atg<br>Met        | ctg<br>Leu        | tac<br>Tyr        | gac<br>Asp<br>400 | gct<br>Ala        | gac<br>Asp        | cag<br>Gln        | cag<br>Gln        | cgc<br>Arg<br>405 | atc<br>Ile        | 1374 |
| aag<br>Lys              | ttc<br>Phe        | atc<br>Ile        | aac<br>Asn<br>410 | atg<br>Met        | aac<br>Asn        | GJ À<br>ààà       | ctt<br>Leu        | atg<br>Met<br>415 | gcc<br>Ala        | gac<br>Asp        | ccc<br>Pro        | atg<br>Met        | aag<br>Lys<br>420 | gtg<br>Val        | tac<br>Tyr        | 1422 |
| aaa<br>Lys              | gac<br>Asp        | cgc<br>Arg<br>425 | cag<br>Gln        | gtc<br>Val        | atg<br>Met        | aac<br>Asn        | atg<br>Met<br>430 | tgg<br>Trp        | agt<br>Ser        | gag<br>Glu        | cag<br>Gln        | gag<br>Glu<br>435 | aag<br>Lys        | gag<br>Glu        | acc<br>Thr        | 1470 |
| ttc<br>Phe              | cgg<br>Arg<br>440 | gag<br>Glu        | aag<br>Lys        | ttc<br>Phe        | atg<br>Met        | cag<br>Gln<br>445 | cat<br>His        | ccc<br>Pro        | aag<br>Lys        | aac<br>Asn        | ttt<br>Phe<br>450 | ggc<br>Gly        | ctg<br>Leu        | atc<br>Ile        | gca<br>Ala        | 1518 |
| tca<br>Ser<br>455       | ttc<br>Phe        | ctg<br>Leu        | gag<br>Glu        | agg<br>Arg        | aag<br>Lys<br>460 | aca<br>Thr        | gtg<br>Val        | gct<br>Ala        | gag<br>Glu        | tgc<br>Cys<br>465 | gtc<br>Val        | ctc<br>Leu        | tat<br>Tyr        | tac<br>Tyr        | tac<br>Tyr<br>470 | 1566 |
| ctg<br>Leu              | act<br>Thr        | aag<br>Lys        | aag<br>Lys        | aat<br>Asn<br>475 | gag<br>Glu        | aac<br>Asn        | tat<br>Tyr        | aag<br>Lys        | agc<br>Ser<br>480 | ctg<br>Leu        | gtg<br>Val        | aga<br>Arg        | cgg<br>Arg        | agc<br>Ser<br>485 | tat<br>Tyr        | 1614 |
| cgg<br>Arg              | cgc<br>Arg        | cgc<br>Arg        | ggc<br>Gly<br>490 | aag<br>Lys        | agc<br>Ser        | cag<br>Gln        | cag<br>Gln        | caa<br>Gln<br>495 | caa<br>Gln        | cag<br>Gln        | cag<br>Gln        | cag<br>Gln        | cag<br>Gln<br>500 | cag<br>Gln        | cag<br>Gln        | 1662 |
| cag<br>Gln              | cag<br>Gln        | cag<br>Gln<br>505 | cag<br>Gln        | cag<br>Gln        | cag<br>Gln        | cag<br>Gln        | ccc<br>Pro<br>510 | Met               | ccc<br>Pro        | cgc<br>Arg        | agc<br>Ser        | agc<br>Ser<br>515 | cag<br>Gln        | gag<br>Glu        | gag<br>Glu        | 1710 |
| aaa<br>Lys              | gat<br>Asp<br>520 | Glu               | aag<br>Lys        | gag<br>Glu        | aag<br>Lys        | gaa<br>Glu<br>525 | Lys               | gag<br>Glu        | gcg<br>Ala        | gag<br>Glu        | aag<br>Lys<br>530 | Glu               | gag<br>Glu        | gag<br>Glu        | aag<br>Lys        | 1758 |
| ccg<br>Pro<br>535       | gag<br>Glu        | gtg<br>Val        | gag<br>Glu        | aac<br>Asn        | gac<br>Asp<br>540 | ьуs               | gaa<br>Glu        | gac<br>Asp        | ctc<br>Leu        | ctc<br>Leu<br>545 | Lys               | gag<br>Glu        | aag<br>Lys        | aca<br>Thr        | gac<br>Asp<br>550 | 1806 |
| gac<br>Asp              | acc<br>Thr        | tca<br>Ser        | Gly               | gag<br>Glu<br>555 | Asp               | aac<br>Asn        | gac<br>Asp        | gag<br>Glu        | aag<br>Lys<br>560 | Glu               | gct<br>Ala        | gtg<br>Val        | gcc<br>Ala        | tcc<br>Ser<br>565 | rās               | 1854 |
| ggc                     | cgc<br>Arg        | aaa<br>Lys        | act<br>Thr<br>570 | Ala               | aac<br>Asn        | agc<br>Ser        | cag<br>Gln        | gga<br>Gly<br>575 | Arg               | cgc<br>Arg        | aaa<br>Lys        | ggc<br>Gly        | Arg<br>580        | ITTE              | acc               | 1902 |

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| cgc<br>Årg        | tca<br>Ser        | atg<br>Met<br>585   | gct<br>Ala        | aat<br>Asn        | gag<br>Glu<br>'   | gcc<br>Ala        | aac<br>Asn<br>590 | agc<br>Ser        | gag<br>Glu        | gag<br>Glu        | gcc<br>Ala        | atc<br>Ile<br>595 | acc<br>Thr        | ccc<br>Pro        | cag<br>Gln        | 1950 |
|-------------------|-------------------|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| cag<br>Gln        | agc<br>Ser<br>600 | gcc<br>Ala          | gag<br>Glu        | ctg<br>Leu        | gcc<br>Ala        | tcc<br>Ser<br>605 | atg<br>Met        | gag<br>Glu        | ctg<br>Leu        | aat<br>Asn        | gag<br>Glu<br>610 | agt<br>Ser        | tct<br>Ser        | cgc<br>Arg        | tgg<br>Trp        | 1998 |
| aca<br>Thr<br>615 | gaa<br>Glu        | gaa<br>Glu          | gaa<br>Glu        | atg<br>Met        | gaa<br>Glu<br>620 | aca<br>Thr        | gcc<br>Ala        | aag<br>Lys        | aaa<br>Lys        | ggt<br>Gly<br>625 | ctc<br>Leu        | ctg<br>Leu        | gaa<br>Glu        | cac<br>His        | 630<br>ggc        | 2046 |
| cgc<br>Arg        | aac<br>Asn        | tgg<br>Trp          | tcg<br>Ser        | gcc<br>Ala<br>635 | atc<br>Ile        | gcc<br>Ala        | cgg<br>Arg        | atg<br>Met        | gtg<br>Val<br>640 | ggc<br>Gly        | tcc<br>Ser        | aag<br>Lys        | act<br>Thr        | gtg<br>Val<br>645 | tcg<br>Ser        | 2094 |
| cag<br>Gln        | tgt<br>Cys        | aag<br>Lys          | aac<br>Asn<br>650 | ttc<br>Phe        | tac<br>Tyr        | ttc<br>Phe        | aac<br>Asn        | tac<br>Tyr<br>655 | aag<br>Lys        | aag<br>Lys        | agg<br>Arg        | cag<br>Gln        | aac<br>Asn<br>660 | ctc<br>Leu        | gat<br>Asp        | 2142 |
| gag<br>Glu        | atc<br>Ile        | ttg<br>Leu<br>665   | cag<br>Gln        | cag<br>Gln        | cac<br>His        | aag<br>Lys        | ctg<br>Leu<br>670 | aag<br>Lys        | atg<br>Met        | gag<br>Glu        | aag<br>Lys        | gag<br>Glu<br>675 | agg<br>Arg        | aac<br>Asn        | gcg<br>Ala        | 2190 |
| cgg<br>Arg        | agg<br>Arg<br>680 | aag<br>L <b>y</b> s | aag<br>Lys        | aag<br>Lys        | aaa<br>Lys        | gcg<br>Ala<br>685 | ccg<br>Pro        | gcg<br>Ala        | gcg<br>Ala        | gcc<br>Ala        | agc<br>Ser<br>690 | gag<br>Glu        | gag<br>Glu        | gct,<br>Ala       | gca<br>Ala        | 2238 |
| ttc<br>Phe<br>695 | ccg<br>Pro        | ccc<br>Pro          | gtg<br>Val        | gtg<br>Val        | gag<br>Glu<br>700 | gat<br>Asp        | gag<br>Glu        | gag<br>Glu        | atg<br>Met        | gag<br>Glu<br>705 | gcg<br>Ala        | tcg<br>Ser        | ggc<br>Gly        | gtg<br>Val        | acg<br>Thr<br>710 | 2286 |
| gga<br>Gly        | aat<br>Asn        | gag<br>Glu          | gag<br>Glu        | gag<br>Glu<br>715 | atg<br>Met        | gtg<br>Val        | gag<br>Glu        | gag<br>Glu        | gct<br>Ala<br>720 | gaa<br>Glu        | gcc<br>Ala        | act<br>Thr        | gtc<br>Val        | aac<br>Asn<br>725 | aac<br>Asn        | 2334 |
| agc<br>Ser        | tca<br>Ser        | gac<br>Asp          | acc<br>Thr<br>730 | gag<br>Glu        | agc<br>Ser        | atc<br>Ile        | ccc<br>Pro        | tct<br>Ser<br>735 | cct<br>Pro        | cac<br>His        | act<br>Thr        | gag<br>Glu        | gcc<br>Ala<br>740 | gcc<br>Ala        | aag<br>Lys        | 2382 |
| gac<br>Asp        | aca<br>Thr        | ggg<br>Gly<br>745   | cag<br>Gln        | aat<br>Asn        | GJÀ<br>ààà        | ccc<br>Pro        | aag<br>Lys<br>750 | ccc<br>Pro        | cca<br>Pro        | gcc<br>Ala        | acc<br>Thr        | ctg<br>Leu<br>755 | ggc<br>Gly        | gcc<br>Ala        | gac<br>Asp        | 2430 |
| Gly<br>ggg        | cca<br>Pro<br>760 | ccc<br>Pro          | cca<br>Pro        | Gly               | cca<br>Pro        | ccc<br>Pro<br>765 | acc<br>Thr        | cca<br>Pro        | cca<br>Pro        | ccg<br>Pro        | gag<br>Glu<br>770 | gac<br>Asp        | atc<br>Ile        | ccg<br>Pro        | gcc<br>Ala        | 2478 |
| ccc<br>Pro<br>775 | act<br>Thr        | gag<br>Glu          | tcc<br>Ser        | acc<br>Thr        | ccg<br>Pro<br>780 | gcc<br>Ala        | tct<br>Ser        | gaa<br>Glu        | gcc<br>Ala        | acc<br>Thr<br>785 | tta<br>Leu        | gcc<br>Ala        | cct<br>Pro        | acg<br>Thr        | ccc<br>Pro<br>790 | 2526 |
| cca<br>Pro        | cca<br>Pro        | gca<br>Ala          | ccc<br>Pro        | cca<br>Pro<br>795 | ttt<br>Phe        | ccc<br>Pro        | tct<br>Ser        | tca<br>Ser        | cct<br>Pro<br>800 | cct<br>Pro        | cct<br>Pro        | gtg<br>Val        | gtc<br>Val        | ccc<br>Pro<br>805 | aag<br>Lys        | 2574 |
| gag<br>Glu        | gag<br>Glu        | aag<br>Lys          | gag<br>Glu<br>810 | gag<br>Glu        | gag<br>Glu        | acc<br>Thr        | gca<br>Ala        | gca<br>Ala<br>815 | gcg<br>Ala        | ccc<br>Pro        | cca<br>Pro        | gtg<br>Val        | gag<br>Glu<br>820 | gag<br>Glu        | GJÀ<br>ààà        | 2622 |
| gag<br>Glu        | gag<br>Glu        | cag<br>Gln<br>825   | Ьys               | ccc<br>Pro        | ccc<br>Pro        | gcg<br>Ala        | gct<br>Ala<br>830 | Glu               | gag<br>Glu        | ctg<br>Leu        | gca<br>Ala        | gtg<br>Val<br>835 | Asp               | aca<br>Thr        | GJÀ<br>āāā        | 2670 |
| aag<br>Lys        | gcc<br>Ala<br>840 | Glu                 | gag<br>Glu        | ccc<br>Pro        | gtc<br>Val        | aag<br>Lys<br>845 | Ser               | gag<br>Glu        | tgc<br>Cys        | acg<br>Thr        | gag<br>Glu<br>850 | Glu               | gcc<br>Ala        | gag<br>Glu        | gag<br>Glu        | 2718 |
| ggg               | ccg               | gcc<br>Ala          | aag<br>Lys        | Gly               | aag<br>Lys        | gac<br>Asp        | gcg<br>Ala        | gag<br>Glu        | gcc               | gct<br>Ala        | gag<br>Glu        | gcc<br>Ala        | acg<br>Thr        | gcc<br>Ala        | gag<br>Glu        | 2766 |

| 855   | 860                                   | 865  | 870                                      |
|---|---------------------------------------|--|--|
| agg gcg ctc aag gca<br>Arg Ala Leu Lys Ala<br>875 | Glu Lys Lys                           | gag ggc ggg agc ggc<br>Glu Gly Gly Ser Gly<br>880  | agg gcc acc 2814<br>Arg Ala Thr<br>885   |
| aca gcc aag agc tcg<br>Thr Ala Lys Ser Ser<br>890 | ggc gcc ccc<br>Gly Ala Pro            | cag gac agc gac tcc<br>Gln Asp Ser Asp Ser<br>895  | agt gcc acc 2862<br>Ser Ala Thr<br>900   |
| tgc agt gca gac gag<br>Cys Ser Ala Asp Glu<br>905 | gtg gat gag<br>Val Asp Glu<br>910     | gcc gag ggc ggc gac<br>Ala Glu Gly Gly Asp<br>915  | aag aac cgg 2910<br>Lys Asn Arg          |
| ctg ctg tcc cca agg<br>Leu Leu Ser Pro Arg<br>920 | ccc agc ctc<br>Pro Ser Leu<br>925     | ctc acc ccg act ggc<br>Leu Thr Pro Thr Gly<br>930  | gac ccc cgg 2958<br>Asp Pro Arg          |
| gcc aat gcc tca ccc<br>Ala Asn Ala Ser Pro<br>935 | cag aag cca<br>Gln Lys Pro<br>940     | ctg gac ctg aag cag<br>Leu Asp Leu Lys Gln<br>945  | ctg aag cag 3006<br>Leu Lys Gln<br>950   |
| cga gcg gct gcc atc<br>Arg Ala Ala Ala Ile<br>955 | Pro Pro Ile                           | cag gtc acc aaa gtc<br>Gln Val Thr Lys Val<br>960  | cat gag ccc 3054<br>His Glu Pro ,<br>965 |
| ccc cgg gag gac gca<br>Pro Arg Glu Asp Ala<br>970 | a gct ccc acc<br>a Ala Pro Thr        | aag cca gct ccc cca<br>Lys Pro Ala Pro Pro<br>975  | gcc cca ccg 3102<br>Ala Pro Pro<br>980   |
| cca ccg caa aac ctg<br>Pro Pro Gln Asn Let<br>985 | g cag ccg gag<br>1 Gln Pro Glu<br>990 | agc gac gcc cct cag<br>Ser Asp Ala Pro Gln<br>995  | cag cct ggc 3150<br>Gln Pro Gly          |
| agc agc ccc cgg gg<br>Ser Ser Pro Arg G<br>1000   | gc aag agc a<br>ly Lys Ser A<br>1005  | gg agc ccg gca ccc<br>rg Ser Pro Ala Pro<br>1010   | ccc gcc gac 3195<br>Pro Ala Asp          |
| aag gag gca gag aa<br>Lys Glu Ala Glu L<br>1015   | ag cct gtg t<br>ys Pro Val P<br>1020  |  | gca gcc gag 3240<br>Ala Ala Glu          |
| gcc cag aag ctg c<br>Ala Gln Lys Leu P<br>1030    | ct ggg gac c<br>ro Gly Asp P<br>1035  | cc cct tgc tgg act<br>Pro Pro Cys Trp Thr<br>1040  | tcc ggc ctg 3285<br>Ser Gly Leu          |
| ccc ttc ccc gtg c<br>Pro Phe Pro Val P<br>1045    | cc ccc cgt g<br>ro Pro Arg G<br>1050  | rag gtg atc aag gcc<br>Slu Val Ile Lys Ala<br>1055 | tcc ccg cat 3330<br>Ser Pro His          |
| gcc ccg gac ccc t<br>Ala Pro Asp Pro S<br>1060    | ca gcc ttc t<br>er Ala Phe S<br>1065  | cc tac gct cca cct<br>Ser Tyr Ala Pro Pro<br>1070  | ggt cac cca 3375<br>Gly His Pro          |
| ctg ccc ctg ggc c<br>Leu Pro Leu Gly L<br>1075    | tc cat gac a<br>eu His Asp T<br>1080  | act gcc cgg ccc gtc<br>Thr Ala Arg Pro Val<br>1085 | ctg ccg cgc 3420<br>Leu Pro Arg          |
| cca ccc acc atc t<br>Pro Pro Thr Ile S<br>1090    | cc aac ccg cer Asn Pro 1              | cct ccc ctc atc tcc<br>Pro Pro Leu Ile Ser<br>1100 | tct gcc aag 3465<br>Ser Ala Lys          |
| cac ccc agc gtc c<br>His Pro Ser Val I<br>1105    | tc gag agg (<br>eu Glu Arg (<br>1110  | caa ata ggt gcc atc<br>Gln Ile Gly Ala Ile<br>1115 | tcc caa gga 3510<br>Ser Gln Gly          |
| atg tcg gtc cag c<br>Met Ser Val Gln I<br>1120    | etc cac gtc<br>Leu His Val<br>1125    | ccg tac tca gag cat<br>Pro Tyr Ser Glu His<br>1130 | gcc aag gcc 3555<br>Ala Lys Ala          |
| ccg gtg ggc cct g                                 | gtc acc atg                           | ggg ctg ccc ctg ccc<br>Page 5                      | atg gac ccc 3600                         |

| Pro        | Val<br>1135        | Gly        | Pro        | Val        | Thr        | Met<br>1140        | Gly        | Leu        | Pro        | Leu        | Pro<br>1145        | Met        | Asp        | Pro        |      |
|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------|
| aaa<br>Lys | aag<br>Lys<br>1150 | ctg<br>Leu | gca<br>Ala | ccc<br>Pro | ttc<br>Phe | agc<br>Ser<br>1155 | gga<br>Gly | gtg<br>Val | aag<br>Lys | cag<br>Gln | gag<br>Glu<br>1160 | cag<br>Gln | ctg<br>Leu | tcc<br>Ser | 3645 |
|            | cgg<br>Arg<br>1165 | ggc<br>Gly | cag<br>Gln | gct<br>Ala | GJA<br>āāā | cca<br>Pro<br>1170 | ccg<br>Pro | gag<br>Glu | agc<br>Ser | ctg<br>Leu | ggg<br>Gly<br>1175 | gtg<br>Val | ccc<br>Pro | aca<br>Thr | 3690 |
| gcc<br>Ala | cag<br>Gln<br>1180 | gag<br>Glu | gcg<br>Ala | tcc<br>Ser | gtg<br>Val | ctg<br>Leu<br>1185 | aga<br>Arg | gly<br>ggg | aca<br>Thr | gct<br>Ala | ctg<br>Leu<br>1190 | ggc<br>Gly | tca<br>Ser | gtt<br>Val | 3735 |
| ccg<br>Pro | ggc<br>Gly<br>1195 | gga<br>Gly | agc<br>Ser | atc<br>Ile | acc<br>Thr | aaa<br>Lys<br>1200 | ggc<br>Gly | att<br>Ile | ccc<br>Pro | agc<br>Ser | aca<br>Thr<br>1205 | cgg<br>Arg | gtg<br>Val | ccc<br>Pro | 3780 |
| tcg<br>Ser | gac<br>Asp<br>1210 | agc<br>Ser | gcc<br>Ala | atc<br>Ile | aca<br>Thr | tac<br>Tyr<br>1215 | cgc<br>Arg | ggc<br>Gly | tcc<br>Ser | atc<br>Ile | acc<br>Thr<br>1220 | cac<br>His | Gly        | acg<br>Thr | 3825 |
|            |                    |            |            |            |            | aag<br>Lys<br>1230 |            |            |            |            |                    |            | atc<br>Ile |            | 3870 |
|            | gac<br>Asp<br>1240 |            | ccg<br>Pro | agt<br>Ser | cgc<br>Arg | ttg<br>Leu<br>1245 | gac<br>Asp | cgc<br>Arg | ggc<br>Gly | cgg<br>Arg | gag<br>Glu<br>1250 | gac<br>Asp | agc<br>Ser | ctg<br>Leu | 3915 |
| ccc<br>Pro | aag<br>Lys<br>1255 | ggc        | cac<br>His | gtc<br>Val | atc<br>Ile | tac<br>Tyr<br>1260 | gaa<br>Glu | ggc<br>Gly | aag<br>Lys | aag<br>Lys | ggc<br>Gly<br>1265 | His        | gtc<br>Val | ttg<br>Leu | 3960 |
| tcc<br>Ser | tat<br>Tyr<br>1270 | gag<br>Glu | ggt<br>Gly | ggc<br>Gly | atg<br>Met | tct<br>Ser<br>1275 | gtg<br>Val | acc<br>Thr | cag<br>Gln | tgc<br>Cys | tcc<br>Ser<br>1280 | Lys        | gag<br>Glu |            | 4005 |
| ggc<br>Gly | aga<br>Arg<br>1285 | Ser        | agc<br>Ser | tca<br>Ser | gga<br>Gly | ccc<br>Pro<br>1290 | ccc<br>Pro | cat<br>His | gag<br>Glu | acg<br>Thr | gcc<br>Ala<br>1295 | Ala        | ccc<br>Pro |            | 4050 |
| cgc<br>Arg | acc<br>Thr<br>1300 | Tyr        | gac<br>Asp | atg<br>Met | atg<br>Met | gag<br>Glu<br>1305 | Gly        | cgc<br>Arg | gtg<br>Val | ggc<br>Gly | aga<br>Arg<br>1310 | Ala        | atc<br>Ile | tcc<br>Ser | 4095 |
| tca<br>Ser | gcc<br>Ala<br>1315 | agc<br>Ser | atc<br>Ile | gaa<br>Glu | ggt<br>Gly | ctc<br>Leu<br>1320 | atg<br>Met | Gly        | cgt<br>Arg | gcc<br>Ala | atc<br>Ile<br>1325 | ccg<br>Pro | ccg<br>Pro | gag<br>Glu | 4140 |
| cga<br>Arg | cac<br>His<br>1330 | Ser        | ccc<br>Pro | cac<br>His | cac<br>His | ctc<br>Leu<br>1335 | Lys        | gag<br>Glu | cag<br>Gln | cac<br>His | cac<br>His<br>1340 | Ile        | cgc<br>Arg | GJÀ<br>aaa | 4185 |
|            | atc<br>Ile<br>1345 | Thr        | caa<br>Gln | Gly        | atc<br>Ile | cct<br>Pro<br>1350 | cgg<br>Arg | tcc<br>Ser | tac<br>Tyr | gtg<br>Val | gag<br>Glu<br>1355 | Ala        | cag<br>Gln | gag<br>Glu | 4230 |
| _          | tac<br>Tyr<br>1360 | Leu        |            |            |            | gcc<br>Ala<br>1365 | Lys        | ctc<br>Leu | cta<br>Leu | aag<br>Lys | cgg<br>Arg<br>1370 | Glu        | ggc<br>Gly | acg<br>Thr | 4275 |
| cct<br>Pro | ccg<br>Pro<br>1375 | Pro        | cca<br>Pro | ccg<br>Pro | ccc<br>Pro | tca<br>Ser<br>1380 | Arg        | gac<br>Asp | ctg<br>Leu | acc<br>Thr | gag<br>Glu<br>1385 | Ala        | tac<br>Tyr | aag<br>Lys | 4320 |
| acg<br>Thr | cag<br>Gln<br>1390 | Ala        | ctg<br>Leu | ggc        | ccc<br>Pro | ctg<br>Leu<br>1395 | Lys        | ctg<br>Leu | aag<br>Lys | ccg<br>Pro | gcc<br>Ala<br>1400 | His        | gag<br>Glu | ggc        | 4365 |

| ctg gtg<br>Leu Val<br>1405 | Ala Ti | cg gtg<br>hr Val   | aag<br>Lys | gag<br>Glu<br>1410 | gcg<br>Ala | ggc<br>Gly | cgc<br>Arg | tcc<br>Ser | atc<br>Ile<br>1415 | cat<br>His | gag<br>Glu | atc<br>Ile | 4410 |
|----------------------------|--------|--------------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------|
| ccg cgc<br>Pro Arg<br>1420 | Glu G  | ag ctg<br>lu Leu   | cgg<br>Arg | cac<br>His<br>1425 | acg<br>Thr | ccc<br>Pro | gag<br>Glu | ctg<br>Leu | ccc<br>Pro<br>1430 | ctg<br>Leu | gcc<br>Ala | ccg<br>Pro | 4455 |
| cgg ccg<br>Arg Pro<br>1435 | Leu Ly | ag gag<br>ys Glu   | ggc<br>Gly | tcc<br>Ser<br>1440 | atc<br>Ile | acg<br>Thr | cag<br>Gln | ggc<br>Gly | acc<br>Thr<br>1445 | ccg<br>Pro | ctc<br>Leu | aag<br>Lys | 4500 |
| tac gac<br>Tyr Asp<br>1450 | Thr G  | gc gcg<br>ly Ala   | tcc<br>Ser | acc<br>Thr<br>1455 | act<br>Thr | ggc<br>Gly | tcc<br>Ser | aaa<br>Lys | aag<br>Lys<br>1460 | cac<br>His | gac<br>Asp | gta<br>Val | 4545 |
| cgc tcc<br>Arg Ser<br>1465 | Leu I  | tc ggc<br>le Gly   | agc<br>Ser | ccc<br>Pro<br>1470 | ggc<br>Gly | cgg<br>Arg | acg<br>Thr | ttc<br>Phe | cca<br>Pro<br>1475 | ccc<br>Pro | gtg<br>Val | cac<br>His | 4590 |
| ccg ctg<br>Pro Leu<br>1480 | Asp V  | tg atg<br>al Met   | gcc<br>Ala | gac<br>Asp<br>1485 | gcc<br>Ala | cgg<br>Arg | gca<br>Ala | ctg<br>Leu | gaa<br>Glu<br>1490 | cgt<br>Arg | gcc<br>Ala | tgc<br>Cys | 4635 |
| tac gag<br>Tyr Glu<br>1495 | Glu S  | gc ctg<br>er Leu   | aag<br>Lys | agc<br>Ser<br>1500 | cgg<br>Arg | cca<br>Pro | Gly<br>ggg | acc<br>Thr | gcc<br>Ala<br>1505 | agc<br>Ser | agc<br>Ser | tcg<br>Ser | 4680 |
| ggg ggc<br>Gly Gly<br>1510 | Ser I  | tt gcg<br>le Ala   | cgc<br>Arg | ggc<br>Gly<br>1515 | gcc<br>Ala | ccg<br>Pro | gtc<br>Val | att<br>Ile | gtg<br>Val<br>1520 | cct<br>Pro | gag<br>Glu | ctg<br>Leu | 4725 |
| ggt aag<br>Gly Lys<br>1525 | Pro A  | gg cag<br>rg Gln   |            |                    |            | acc<br>Thr | tat<br>Tyr | gag<br>Glu | gac<br>Asp<br>1535 | cac<br>His | GJA<br>GGA | gca<br>Ala | 4770 |
| ccc ttt<br>Pro Phe<br>1540 | Ala G  | gc cac<br>ly His   | ctc<br>Leu | cca<br>Pro<br>1545 | cga<br>Arg | ggt<br>Gly | tcg<br>Ser | ccc<br>Pro | gtg<br>Val<br>1550 |            | atg<br>Met |            | 4815 |
| gag ccc<br>Glu Pro<br>1555 | Thr P  | cg cgc             | ctg<br>Leu | cag<br>Gln<br>1560 | gag<br>Glu | ggc<br>Gly | agc<br>Ser | ctt<br>Leu | tcg<br>Ser<br>1565 | tcc<br>Ser | agc<br>Ser |            | 4860 |
| gca tcc<br>Ala Ser<br>1570 | Gln A  | ac cga<br>Asp Arg  |            |                    |            | tcg<br>Ser | acg<br>Thr | cct<br>Pro | cgt<br>Arg<br>1580 | gag<br>Glu | atc<br>Ile | gcc<br>Ala | 4905 |
| aag tcc<br>Lys Ser<br>1585 | Pro H  | ac agc<br>lis Ser  | acc<br>Thr | gtg<br>Val<br>1590 | ccc<br>Pro | gag<br>Glu | cac<br>His | cac<br>His | cca<br>Pro<br>1595 | cac<br>His | ccc<br>Pro | atc<br>Ile | 4950 |
| tcg ccc<br>Ser Pro<br>1600 | Tyr G  | gag cac<br>Slu His | ctg<br>Leu | ctt<br>Leu<br>1605 | Arg        | ggc<br>Gly | gtg<br>Val | agt<br>Ser | ggc<br>Gly<br>1610 | Val        | gac<br>Asp | ctg<br>Leu | 4995 |
| tat cgc<br>Tyr Arg<br>161  | Ser H  | ac atc<br>His Ile  | ccc<br>Pro | ctg<br>Leu<br>1620 | Ala        | ttc<br>Phe | gac<br>Asp | ccc<br>Pro | acc<br>Thr<br>1625 | Ser        | ata<br>Ile | ccc<br>Pro | 5040 |
| cgc ggc<br>Arg Gly<br>163  | Ile P  | cct ctg<br>Pro Leu | gac<br>Asp | gca<br>Ala<br>1635 | Ala        | gct<br>Ala | gcc<br>Ala | tac<br>Tyr | tac<br>Tyr<br>1640 | Leu        | ccc<br>Pro | cga<br>Arg | 5085 |
| cac ctg<br>His Leu<br>164  | Ala P  | ccc aac<br>Pro Asn | ccc<br>Pro | acc<br>Thr<br>1650 | Tyr        | ccg<br>Pro | cac<br>His | ctg<br>Leu | tac<br>Tyr<br>1655 | Pro        | ccc<br>Pro | tac<br>Tyr | 5130 |
| ctc atc<br>Leu Ile<br>166  | Arg G  | ggc tac<br>Sly Tyr | ccc<br>Pro | gac<br>Asp<br>1665 | Thr        | gcg<br>Ala | gcg<br>Ala | ctg<br>Leu | gag<br>Glu<br>1670 | Asn        | cgg<br>Arg | cag<br>Gln | 5175 |

| acc a<br>Thr I      | itc<br>[le<br>[675 | atc<br>Ile | aat<br>Asn  | gac<br>Asp | tac<br>Tyr | atc<br>Ile<br>1680 | acc<br>Thr | tcg<br>Ser | cag<br>Gln | cag<br>Gln | atg<br>Met<br>1685 | cac<br>His |            |            | 5220 |
|---------------------|--------------------|------------|-------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------|
| acg g<br>Thr A      | gcc<br>Ala<br>1690 | acc<br>Thr | gcc<br>Ala  | atg<br>Met | gcc<br>Ala | cag<br>Gln<br>1695 | cga<br>Arg | gct<br>Ala | gat<br>Asp | atg<br>Met | ctg<br>Leu<br>1700 |            | ggc<br>Gly |            | 5265 |
| tcg c<br>Ser P      | ccc<br>Pro<br>1705 | cgc<br>Arg | gag<br>Glu  | tcc<br>Ser | tcg<br>Ser | ctg<br>Leu<br>1710 | gca<br>Ala | ctc<br>Leu | aac<br>Asn | tac<br>Tyr | gct<br>Ala<br>1715 | gcg<br>Ala | ggt<br>Gly | ccc<br>Pro | 5310 |
| cga g<br>Arg G<br>1 | ggc<br>Sly<br>L720 | atc<br>Ile | atc<br>Ile  | gac<br>Asp | ctg<br>Leu | tcc<br>Ser<br>1725 | caa<br>Gln | gtg<br>Val | cca<br>Pro | cac<br>His | ctg<br>Leu<br>1730 | cct<br>Pro | gtg<br>Val | ctc<br>Leu | 5355 |
| gtg c<br>Val E      | ccc<br>Pro<br>1735 | ccg<br>Pro | aca<br>Thr  | cca<br>Pro | ggc<br>Gly | acc<br>Thr<br>1740 | cca<br>Pro | gcc<br>Ala | acc<br>Thr | gcc<br>Ala | atg<br>Met<br>1745 | gac<br>Asp | cgc<br>Arg | ctt<br>Leu | 5400 |
| gcc t<br>Ala I<br>1 | tac<br>Tyr<br>1750 | ctc<br>Leu | ccc<br>Pro  | acc<br>Thr | gcg<br>Ala | ccc<br>Pro<br>1755 | cag<br>Gln | ccc<br>Pro | ttc<br>Phe | agc<br>Ser | agc<br>Ser<br>1760 | cgc<br>Arg | cac<br>His | agc<br>Ser | 5445 |
| agc t<br>Ser S      | tcc<br>Ser<br>1765 | cca<br>Pro | ctc<br>Leu  | tcc<br>Ser | cca<br>Pro | gga<br>Gly<br>1770 | ggt<br>Gly | cca<br>Pro | aca<br>Thr | cac<br>His | ttg<br>Leu<br>1775 | aca<br>Thr | aaa<br>Lys | cca<br>Pro | 5490 |
| acc a<br>Thr I      | acc<br>Thr<br>1780 | acg<br>Thr | tcc<br>Ser  | tcg<br>Ser | tcc<br>Ser | gag<br>Glu<br>1785 | cgg<br>Arg | gag<br>Glu | cga<br>Arg | gac<br>Asp | cgg<br>Arg<br>1790 | gat<br>Asp | cga<br>Arg | gag<br>Glu | 5535 |
| Arg A               | gac<br>Asp<br>1795 | cgg<br>Arg | gat<br>Asp  | cgg<br>Arg | gag<br>Glu | cgg<br>Arg<br>1800 | gaa<br>Glu | aag<br>Lys | tcc<br>Ser | atc<br>Ile | ctc<br>Leu<br>1805 | acg<br>Thr | tcc<br>Ser | acc<br>Thr | 5580 |
| Thr T               | acg<br>Thr<br>1810 | gtg<br>Val | gag<br>Glu  | cac<br>His | gca<br>Ala | ccc<br>Pro<br>1815 | atc<br>Ile | tgg<br>Trp | aga<br>Arg | cct<br>Pro | ggt<br>Gly<br>1820 | aca<br>Thr | gag<br>Glu | cag<br>Gln | 5625 |
| Ser S               | agc<br>Ser<br>1825 | ggc<br>Gly | agc<br>Ser  | agc<br>Ser | ggc<br>Gly | agc<br>Ser<br>1830 | agc<br>Ser | ggc        | Gly<br>ggg | ggt<br>Gly | ggg<br>Gly<br>1835 | Gly        | agc<br>Ser | agc<br>Ser | 5670 |
| Ser A               | cgc<br>Arg<br>1840 | ccc<br>Pro | gcc<br>Ala  | tcc<br>Ser | cac<br>His | tcc<br>Ser<br>1845 | cat<br>His | gcc<br>Ala | cac<br>His | cag<br>Gln | cac<br>His<br>1850 | Ser        | ccc        | atc<br>Ile | 5715 |
| Ser I               | cct<br>Pro<br>1855 | cgg<br>Arg | acc<br>Thr  | cag<br>Gln | gat<br>Asp | gcc<br>Ala<br>1860 | ctc<br>Leu | cag<br>Gln | cag<br>Gln | aga<br>Arg | ccc<br>Pro<br>1865 | Ser        | gtg<br>Val | ctt<br>Leu | 5760 |
|                     | aac<br>Asn<br>1870 | aca<br>Thr | ggc<br>ggc  | atg<br>Met | aag<br>Lys | ggt<br>Gly<br>1875 | atc<br>Ile | atc<br>Ile | acc<br>Thr | gct<br>Ala | gtg<br>Val<br>1880 | Glu        | ccc<br>Pro | agc<br>Ser | 5805 |
|                     | ccc<br>Pro<br>1885 | acg<br>Thr | gtc<br>Val  | ctg<br>Leu | agg<br>Arg | tcc<br>Ser<br>1890 | Thr        | tcc<br>Ser | acc<br>Thr | tcc<br>Ser | tca<br>Ser<br>1895 | Pro        | gtt<br>Val | cgc<br>Arg | 5850 |
|                     | gct<br>Ala<br>1900 | Āla        | aca<br>Thr  | ttc<br>Phe | cca<br>Pro | cct<br>Pro<br>1905 | Ala        | acc<br>Thr | cac<br>His | tgc<br>Cys | cca<br>Pro<br>1910 | Leu        | Gly        | Gly<br>Gly | 5895 |
|                     | ctc<br>Leu<br>1915 | Asp        | GJ A<br>aaa | gtc<br>Val | tac<br>Tyr | cct<br>Pro<br>1920 | Thr        | ctc<br>Leu | atg<br>Met | gag<br>Glu | ccc<br>Pro<br>1925 | Val        | ttg<br>Leu | ctg<br>Leu | 5940 |
| ccc i               | aag<br>Lys         | gag<br>Glu | gcc<br>Ala  | ccc        | cgg<br>Arg | gtc<br>Val         | gcc<br>Ala | cgg<br>Arg | cca<br>Pro | gag<br>Glu | cgg                | ccc<br>Pro | cga<br>Arg | gca<br>Ala | 5985 |

|            | 1930               |            |            |            |            | 1935               |            |            |                 |              | 1940               |            |            |            |      |
|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|-----------------|--------------|--------------------|------------|------------|------------|------|
| gac<br>Asp | acc<br>Thr<br>1945 | ggc<br>Gly | cat<br>His | gcc<br>Ala | ttc<br>Phe | ctc<br>Leu<br>1950 | gcc<br>Ala | aag<br>Lys | ccc<br>Pro      | cca<br>Pro   | gcc<br>Ala<br>1955 | cgc<br>Arg | tcc<br>Ser | G]Å<br>āāā | 6030 |
| ctg<br>Leu | gag<br>Glu<br>1960 | ccc<br>Pro | gcc<br>Ala | tcc<br>Ser | tcc<br>Ser | ccc<br>Pro<br>1965 | agc<br>Ser | aag<br>Lys | ggc<br>Gly      | tcg<br>Ser   | gag<br>Glu<br>1970 | ccc<br>Pro | cgg<br>Arg | ccc<br>Pro | 6075 |
| cta<br>Leu | gtg<br>Val<br>1975 | cct<br>Pro | cct<br>Pro | gtc<br>Val | tct<br>Ser | ggc<br>Gly<br>1980 | cac<br>His | gcc<br>Ala | acc<br>Thr      | atc<br>Ile   | gcc<br>Ala<br>1985 | cgc<br>Arg | acc<br>Thr | cct<br>Pro | 6120 |
| gcg<br>Ala | aag<br>Lys<br>1990 | aac<br>Asn | ctc<br>Leu | gca<br>Ala | cct<br>Pro | cac<br>His<br>1995 | cac<br>His | gcc<br>Ala | agc<br>Ser      | ccg<br>Pro   | gac<br>Asp<br>2000 | ccg<br>Pro | ccg<br>Pro | gcg<br>Ala | 6165 |
| cca<br>Pro | cct<br>Pro<br>2005 | gcc<br>Ala | tcg<br>Ser | gcc<br>Ala | tcg<br>Ser | gac<br>Asp<br>2010 | ccg<br>Pro | cac<br>His | cgg<br>Arg      | gaa<br>Glu   | aag<br>Lys<br>2015 | act<br>Thr | caa<br>Gln | agt<br>Ser | 6210 |
| aaa<br>Lys | ccc<br>Pro<br>2020 | ttt<br>Phe | tcc<br>Ser | atc<br>Ile | cag<br>Gln | gaa<br>Glu<br>2025 | ctg<br>Leu | gaa<br>Glu | ctc<br>Leu      | cgt<br>Arg   | tct<br>Ser<br>2030 | ctg<br>Leu | ggt<br>Gly | tac<br>Tyr | 6255 |
| cac<br>His | ggc<br>Gly<br>2035 | agc<br>Ser | agc<br>Ser | tac<br>Tyr | agc<br>Ser | ccc<br>Pro<br>2040 | gaa<br>Glu | ejà<br>aaa | gtg<br>Val      | gag<br>Glu   | ccc<br>Pro<br>2045 | gtc<br>Val | agc<br>Ser | cct<br>Pro | 6300 |
| gtg<br>Val | agc<br>Ser<br>2050 | tca<br>Ser | ccc<br>Pro | agt<br>Ser | ctg<br>Leu | acc<br>Thr<br>2055 | cac<br>His | gac<br>Asp | aag<br>Lys      | ggg<br>Gly   | ctc<br>Leu<br>2060 | ccc<br>Pro | aag<br>Lys | cac<br>His | 6345 |
| ctg<br>Leu | gaa<br>Glu<br>2065 | Glu        | ctc<br>Leu | gac<br>Asp | aag<br>Lys | agc<br>Ser<br>2070 | cac<br>His | ctg<br>Leu | gag<br>Glu      | GJÀ<br>ââà   | gag<br>Glu<br>2075 | ctg<br>Leu | cgg<br>Arg | ccc<br>Pro | 6390 |
| aag<br>Lys | cag<br>Gln<br>2080 | Pro        | ggc        | ccc<br>Pro | gtg<br>Val | aag<br>Lys<br>2085 | Leu        | ggc<br>Gly | GJ A<br>G G G G | gag<br>Glu   | gcc<br>Ala<br>2090 | Ala        | cac<br>His | ctc<br>Leu | 6435 |
| cca<br>Pro | cac<br>His<br>2095 | Leu        | cgg<br>Arg | ccg<br>Pro | ctg<br>Leu | cct<br>Pro<br>2100 | Glu        | agc<br>Ser | cag<br>Gln      | ccc<br>Pro   | tcg<br>Ser<br>2105 | Ser        | agc<br>Ser | ccg<br>Pro | 6480 |
| ctg<br>Leu | ctc<br>Leu<br>2110 | Gln        | acc<br>Thr | gcc<br>Ala | cca<br>Pro | ggg<br>Gly<br>2115 | Val        | aaa<br>Lys | ggt<br>Gly      | cac<br>His   | cag<br>Gln<br>2120 | Arg        | gtg<br>Val | gtc<br>Val | 6525 |
| acc<br>Thr | ctg<br>Leu<br>2125 |            | cag<br>Gln | cac<br>His | atc<br>Ile | agt<br>Ser<br>2130 | gag<br>Glu | gtc<br>Val | atc<br>Ile      | aca<br>Thr   | cag<br>Gln<br>2135 | gac<br>Asp | tac<br>Tyr | acc<br>Thr | 6570 |
| cgg<br>Arg | cac<br>His<br>2140 | His        | cca<br>Pro | cag<br>Gln | cag<br>Gln | ctc<br>Leu<br>2145 | Ser        | gca<br>Ala | ccc<br>Pro      | ctg<br>Leu   | ccc<br>Pro<br>2150 | Ala        | ccc        | ctc<br>Leu | 6615 |
| tac<br>Tyr | tcc<br>Ser<br>2155 | Phe        | cct<br>Pro | ggg        | gcc<br>Ala | agc<br>Ser<br>2160 | Cys        | ccc<br>Pro | gtc<br>Val      | ctg<br>Leu   | gac<br>Asp<br>2165 | Leu        | cgc<br>Arg | cgc<br>Arg | 6660 |
|            | ccc<br>Pro<br>2170 | Ser        | gac<br>Asp | cto<br>Lev | tac<br>Tyr | ctc<br>Leu<br>2175 | Pro        | ccc<br>Pro | ccg<br>Pro      | gac<br>Asp   | cat<br>His<br>2180 | Gly        | gco<br>Ala | ccg<br>Pro | 6705 |
| gcc<br>Ala | cgt<br>Arg<br>2185 | Gly        | tco<br>Ser | Pro        | cac<br>His | agc<br>Ser<br>2190 | Glu        | ggg<br>Gly | ggc<br>Gly      | : aag<br>Lys | agg<br>Arg<br>2195 | Ser        | cca<br>Pro | gag<br>Glu | 6750 |
| cca        | aac                | aag        | acc        | , tcg      | gto        | ttg:               | ggt        | ggt        | . ggt           |              | gac<br>je 9        | ggt        | att        | gaa        | 6795 |

| Pro        | Asn<br>2200        | Lys        | Thr        | Ser        | Va⊥        | Leu<br>2205        | GТУ        | СТĀ        | СТА        | G1u        | Asp<br>2210        | Gly        | Ile        | G1u        |      |
|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------|
|            | gtg<br>Val<br>2215 |            | cca<br>Pro | ccg<br>Pro | gag<br>Glu | ggc<br>Gly<br>2220 | atg<br>Met | acg<br>Thr | gag<br>Glu | cca<br>Pro | ggg<br>Gly<br>2225 | cac<br>His | tcc<br>Ser | cgg<br>Arg | 6840 |
| agt<br>Ser | gct<br>Ala<br>2230 | gtg<br>Val | tac<br>Tyr | ccg<br>Pro | ctg<br>Leu | ctg<br>Leu<br>2235 | tac<br>Tyr | cgg<br>Arg | gat<br>Asp | GJÀ<br>āāā | gaa<br>Glu<br>2240 | cag<br>Gln | acg<br>Thr | gag<br>Glu | 6885 |
| ccc<br>Pro | agc<br>Ser<br>2245 | agg<br>Arg | atg<br>Met | ggc        | tcc<br>Ser | aag<br>Lys<br>2250 | tct<br>Ser | cca<br>Pro | ggc<br>Gly | aac<br>Asn | acc<br>Thr<br>2255 | agc<br>Ser | cag<br>Gln | ccg<br>Pro | 6930 |
|            | gcc<br>Ala<br>2260 | ttc<br>Phe | ttc<br>Phe | agc<br>Ser | aag<br>Lys | ctg<br>Leu<br>2265 | acc<br>Thr | gag<br>Glu | agc<br>Ser | aac<br>Asn | tcc<br>Ser<br>2270 | gcc<br>Ala | atg<br>Met | gtc<br>Val | 6975 |
| _          | tcc<br>Ser<br>2275 | aag<br>Lys | aag<br>Lys | caa<br>Gln | gag<br>Glu | atc<br>Ile<br>2280 | aac<br>Asn | aag<br>Lys | aag<br>Lys | ctg<br>Leu | aac<br>Asn<br>2285 | Thr        | cac<br>His |            | 7020 |
| cgg<br>Arg | aat<br>Asn<br>2290 | gag<br>Glu | cct<br>Pro | gaa<br>Glu | tac<br>Tyr | aat<br>Asn<br>2295 | atc<br>Ile | agc<br>Ser | cag<br>Gln | cct<br>Pro | ggg<br>Gly<br>2300 | acg<br>Thr | gag<br>Glu | atc<br>Ile | 7065 |
| ttc<br>Phe | aat<br>Asn<br>2305 | atg<br>Met | ccc<br>Pro | gcc<br>Ala | atc<br>Ile | acc<br>Thr<br>2310 | gga<br>Gly | aca<br>Thr | ggc<br>Gly | ctt<br>Leu | atg<br>Met<br>2315 | acc<br>Thr | tat<br>Tyr | aga<br>Arg | 7110 |
| agc<br>Ser | cag<br>Gln<br>2320 | gcg<br>Ala | gtg<br>Val | cag<br>Gln | gaa<br>Glu | cat<br>His<br>2325 | gcc<br>Ala | agc<br>Ser | acc<br>Thr | aac<br>Asn | atg<br>Met<br>2330 | Gly        | ctg<br>Leu | gag<br>Glu | 7155 |
|            | ata<br>Ile<br>2335 | att<br>Ile | aga<br>Arg | aag<br>Lys | gca<br>Ala | ctc<br>Leu<br>2340 | atg<br>Met | ggt<br>Gly | aaa<br>Lys | tat<br>Tyr | gac<br>Asp<br>2345 | Gln        | tgg<br>Trp | gaa<br>Glu | 7200 |
|            | tcc<br>Ser<br>2350 | ccg<br>Pro | ccg<br>Pro | ctc<br>Leu | agc<br>Ser | gcc<br>Ala<br>2355 | aat<br>Asn | gct<br>Ala | ttt<br>Phe | aac<br>Asn | cct<br>Pro<br>2360 | Leu        | aat<br>Asn | gcc<br>Ala | 7245 |
| agt<br>Ser | gcc<br>Ala<br>2365 | agc<br>Ser | ctg<br>Leu | ccc<br>Pro | gct<br>Ala | gct<br>Ala<br>2370 | atg<br>Met | ccc<br>Pro | ata<br>Ile | acc<br>Thr | gct<br>Ala<br>2375 | Ala        | gac<br>Asp | gga<br>Gly | 7290 |
|            | agt<br>Ser<br>2380 | gac<br>Asp | cac<br>His | aca<br>Thr | ctc<br>Leu | acc<br>Thr<br>2385 | tcg<br>Ser | cca<br>Pro | ggt<br>Gly | ggc        | ggc<br>Gly<br>2390 | Glà<br>aaa | aag<br>Lys | gcc<br>Ala | 7335 |
| _          | gtc<br>Val<br>2395 | tct<br>Ser | ggc<br>Gly | aga<br>Arg | ccc<br>Pro | agc<br>Ser<br>2400 |            | cga<br>Arg | aaa<br>Lys | gcc<br>Ala | aag<br>Lys<br>2405 | Ser        | ccg<br>Pro | gcc<br>Ala | 7380 |
|            | ggc<br>Gly<br>2410 | Leu        | gca<br>Ala | tct<br>Ser | Gly<br>ggg | gac<br>Asp<br>2415 |            | cca<br>Pro | ccc<br>Pro | tct<br>Ser | gtc<br>Val<br>2420 | Ser        | tca<br>Ser | gtg<br>Val | 7425 |
|            | tcg<br>Ser<br>2425 | Glu        |            |            |            | aac<br>Asn<br>2430 | Arg        | cgg<br>Arg | acg<br>Thr | ccg<br>Pro | ctc<br>Leu<br>2435 | Thr        | aac<br>Asn | cgc<br>Arg | 7470 |
|            | tgg<br>Trp<br>2440 | Glu        |            |            |            | tcg<br>Ser<br>2445 | Ser        | gca<br>Ala | ggt        | tcc<br>Ser | acg<br>Thr<br>2450 | Pro        | ttc<br>Phe | ccc        | 751  |
| tac<br>Tyr | aac<br>Asn<br>2455 | Pro        | ctg<br>Leu | atc<br>Ile | atg<br>Met | cgg<br>Arg<br>2460 | Leu        | cag<br>Gln | gcg<br>Ala | ggt<br>Gly | gtc<br>Val<br>2465 | Met        | gct        | tcc<br>Ser | 7560 |

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| cca ccc cca ccg ggc ctc ccc gcg ggc agc ggg ccc ctc gct ggc<br>Pro Pro Pro Gly Leu Pro Ala Gly Ser Gly Pro Leu Ala Gly<br>2470 2480          | 7605 |
|--|------|
| ccc cac cac gcc tgg gac gag gag ccc aag cca ctg ctc tgc tcg<br>Pro His His Ala Trp Asp Glu Glu Pro Lys Pro Leu Leu Cys Ser<br>2485 2490 2495 | 7650 |
| cag tac gag aca ctc tcc gac agc gag tga ctcagaacag ggcggggggg<br>Gln Tyr Glu Thr Leu Ser Asp Ser Glu<br>2500 2505                            | 7700 |
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Pro Arg Tyr Pro Pro His Ser Leu Ser Tyr Pro Val Gln Ile Ala Arg

Thr His Thr Asp Val Gly Leu Leu Glu Tyr Gln His His Ser Arg Asp

Tyr Ala Ser His Leu Ser Pro Gly Ser Ile Ile Gln Pro Gln Arg Arg

Arg Pro Ser Leu Leu Ser Glu Phe Gln Pro Gly Asn Glu Arg Ser Gln Page 11

65 70 75 80

Glu Leu His Leu Arg Pro Glu Ser His Ser Tyr Leu Pro Glu Leu Gly
85 90 95

Lys Ser Glu Met Glu Phe Ile Glu Ser Lys Arg Pro Arg Leu Glu Leu 100 105 110

Leu Pro Asp Pro Leu Leu Arg Pro Ser Pro Leu Leu Ala Thr Gly Gln
115 120 125

Pro Ala Gly Ser Glu Asp Leu Thr Lys Asp Arg Ser Leu Thr Gly Lys 130 135 140

Leu Glu Pro Val Ser Pro Pro Ser Pro Pro His Thr Asp Pro Glu Leu 145 150 155 160

Glu Leu Val Pro Pro Arg Leu Ser Lys Glu Glu Leu Ile Gln Asn Met 165 170 175

Asp Arg Val Asp Arg Glu Ile Thr Met Val Glu Gln Gln Ile Ser Lys 180 185 190

Leu Lys Lys Gln Gln Gln Leu Glu Glu Glu Ala Ala Lys Pro Pro 195 200 205

Glu Pro Glu Lys Pro Val Ser Pro Pro Pro Ile Glu Ser Lys His Arg 210 215 220

Ser Leu Val Gln Ile Ile Tyr Asp Glu Asn Arg Lys Lys Ala Glu Ala 225 230 235 240

Ala His Arg Ile Leu Glu Gly Leu Gly Pro Gln Val Glu Leu Pro Leu 245 250 255

Tyr Asn Gln Pro Ser Asp Thr Arg Gln Tyr His Glu Asn Ile Lys Ile 260 265 270

Asn Gln Ala Met Arg Lys Lys Leu Ile Leu Tyr Phe Lys Arg Arg Asn 275 280 285

His Ala Arg Lys Gln Trp Glu Gln Lys Phe Cys Gln Arg Tyr Asp Gln 290 295 300

Leu Met Glu Ala Trp Glu Lys Lys Val Glu Arg Ile Glu Asn Asn Pro 305 310 315 320

Arg Arg Arg Ala Lys Glu Ser Lys Val Arg Glu Tyr Tyr Glu Lys Gln 325 330 335

Phe Pro Glu Ile Arg Lys Gln Arg Glu Leu Gln Glu Arg Met Gln Arg 340 345 350

- Val Gly Gln Arg Gly Ser Gly Leu Ser Met Ser Pro Ala Arg Ser Glu 355 360 365
- His Glu Val Ser Glu Ile Ile Asp Gly Leu Ser Glu Gln Glu Asn Leu 370 375 380
- Glu Lys Gln Met Arg Gln Leu Ala Val Ile Pro Pro Met Leu Tyr Asp 385 390 395 400
- Ala Asp Gln Gln Arg Ile Lys Phe Ile Asn Met Asn Gly Leu Met Ala 405 410 415
- Asp Pro Met Lys Val Tyr Lys Asp Arg Gln Val Met Asn Met Trp Ser 420 425 430
- Glu Gln Glu Lys Glu Thr Phe Arg Glu Lys Phe Met Gln His Pro Lys 435 440 445
- Asn Phe Gly Leu Ile Ala Ser Phe Leu Glu Arg Lys Thr Val Ala Glu 450 455 460
- Cys Val Leu Tyr Tyr Tyr Leu Thr Lys Lys Asn Glu Asn Tyr Lys Ser 465 470 475 480
- Leu Val Arg Arg Ser Tyr Arg Arg Gly Lys Ser Gln Gln Gln Gln 485 490 495
- Arg Ser Ser Gln Glu Glu Lys Asp Glu Lys Glu Lys Glu Lys Glu Ala 515 520 525
- Glu Lys Glu Glu Glu Lys Pro Glu Val Glu Asn Asp Lys Glu Asp Leu 530 540
- Leu Lys Glu Lys Thr Asp Asp Thr Ser Gly Glu Asp Asn Asp Glu Lys 545 550 555 560
- Glu Ala Val Ala Ser Lys Gly Arg Lys Thr Ala Asn Ser Gln Gly Arg 565 570 575
- Arg Lys Gly Arg Ile Thr Arg Ser Met Ala Asn Glu Ala Asn Ser Glu 580 585 590
- Glu Ala Ile Thr Pro Gln Gln Ser Ala Glu Leu Ala Ser Met Glu Leu 595 600 605
- Asn Glu Ser Ser Arg Trp Thr Glu Glu Glu Met Glu Thr Ala Lys Lys 610 615 620
- Gly Leu Leu Glu His Gly Arg Asn Trp Ser Ala Ile Ala Arg Met Val 625 630 635 640

| Gly        | Ser        | Lys        | Thr        | Val<br>645 | Ser        | Gln        | Суз        | Ьуз        | Asn<br>650 | Phe        | Tyr        | Phe        | Asn        | Tyr<br>655 | Ьуз        |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Lys        | Arg        | Gln        | Asn<br>660 | Leu        | Asp        | Glu        | Ile        | Leu<br>665 | Gln        | Gln        | His        | Lys        | Leu<br>670 | Lys        | Met        |
| Glu        | Lys        | Glu<br>675 | Arg        | Asn        | Ala        | Arg        | Arg<br>680 | Lуз        | Lys        | Lys        | гуз        | Ala<br>685 | Pro        | Ala        | Ala        |
| Ala        | Ser<br>690 | Glu        | Glu        | Ala        | Ala        | Phe<br>695 | Pro        | Pro        | Val        | Val        | Glu<br>700 | Asp        | Glu        | Glu        | Met        |
| Glu<br>705 | Ala        | Ser        | Gly        | Val        | Thr<br>710 | Gly        | Asn        | Glu        | Glu        | Glu<br>715 | Met        | Val        | Glu        | Glu        | Ala<br>720 |
| Glu        | Ala        | Thr        | Val        | Asn<br>725 | Asn        | Ser        | Ser        | Asp        | Thr<br>730 | Glu        | Ser        | Ile        | Pro        | Ser<br>735 | Pro        |
| His        | Thr        | Glu        | Ala<br>740 | Ala        | Lys        | Asp        | Thr        | Gly<br>745 | Gln        | Asn        | Gly        | Pro        | Lys<br>750 | Pro        | Pro        |
| Ala        | Thr        | Leu<br>755 | Gly        | Ala        | Asp        | Gly        | Pro<br>760 | Pro        | Pro        | Gly        | Pro        | Pro<br>765 | Thr        | Pro        | Pro        |
| Pro        | Glu<br>770 | Asp        | Ile        | Pro        | Ala        | Pro<br>775 | Thr        | Glu        | Ser        | Thr        | Pro<br>780 | Ala        | Ser        | Glu        | Ala        |
| Thr<br>785 | Leu        | Ala        | Pro        | Thr        | Pro<br>790 | Pro        | Pro        | Ala        | Pro        | Pro<br>795 | Phe        | Pro        | Ser        | Ser        | Pro<br>800 |
| Pro        | Pro        | Val        | Val        | Pro<br>805 | Lys        | Glu        | Glu        | ГÀЗ        | Glu<br>810 | Glu        | Glu        | Thr        | Ala        | Ala<br>815 | Ala        |
| Pro        | Pro        | Val        | Glu<br>820 | Glu        | Gly        | Glu        | Glu        | Gln<br>825 | Lys        | Pro        | Pro        | Ala        | Ala<br>830 | Glu        | Glu        |
| Leu        | Ala        | Val<br>835 |            | Thr        | Gly        | Lys        | Ala<br>840 | Glu        | Glu        | Pro        | Val        | Lys<br>845 | Ser        | Glu        | Суз        |
| Thr        | Glu<br>850 | Glu        | Ala        | Glu        | Glu        | Gly<br>855 | Pro        | Ala        | Lys        | Gly        | Lys<br>860 | Asp        | Ala        | Glu        | Ala        |
| Ala<br>865 |            | Ala        | Thr        | Ala        | Glu<br>870 | Arg        | Ala        | Leu        | Lys        | Ala<br>875 | Glu        | Lys        | Lys        | Glu        | Gly<br>880 |
| Gly        | Ser        | Gly        | Arg        | Ala<br>885 | Thr        | Thr        | Ala        | Lys        | Ser<br>890 |            | Gly        | Ala        | Pro        | Gln<br>895 | Asp        |
| Ser        | Asp        | Ser        | Ser<br>900 |            | Thr        | Cys        | Ser        | Ala<br>905 |            | Glu        | . Val      | Asp        | Glu<br>910 | Ala        | Glu        |

Gly Gly Asp Lys Asn Arg Leu Leu Ser Pro Arg Pro Ser Leu Leu Thr 915 920 925

- Pro Thr Gly Asp Pro Arg Ala Asn Ala Ser Pro Gln Lys Pro Leu Asp 930 935
- Leu Lys Gln Leu Lys Gln Arg Ala Ala Ala Ile Pro Pro Ile Gln Val 945 950 955 960
- Thr Lys Val His Glu Pro Pro Arg Glu Asp Ala Ala Pro Thr Lys Pro 965 970 975
- Ala Pro Pro Ala Pro Pro Pro Gln Asn Leu Gln Pro Glu Ser Asp
- Ala Pro Gln Gln Pro Gly Ser Ser Pro Arg Gly Lys Ser Arg Ser Pro 995 1000 1005
- Ala Pro Pro Ala Asp Lys Glu Ala Glu Lys Pro Val Phe Pro 1010 1015 1020
- Ala Phe Ala Ala Glu Ala Gln Lys Leu Pro Gly Asp Pro Pro Cys 1025 1030 1035
- Trp Thr Ser Gly Leu Pro Phe Pro Val Pro Pro Arg Glu Val Ile 1040 1045 1050
- Lys Ala Ser Pro His Ala Pro Asp Pro Ser Ala Phe Ser Tyr Ala 1055 1060 1065
- Pro Pro Gly His Pro Leu Pro Leu Gly Leu His Asp Thr Ala Arg 1070 1075 1080
- Pro Val Leu Pro Arg Pro Pro Thr Ile Ser Asn Pro Pro Pro Leu
- Ile Ser Ser Ala Lys His Pro Ser Val Leu Glu Arg Gln Ile Gly
  1100 1105 1110
- Ala Ile Ser Gln Gly Met Ser Val Gln Leu His Val Pro Tyr Ser 1115 1120 1125
- Glu His Ala Lys Ala Pro Val Gly Pro Val Thr Met Gly Leu Pro 1130 1140
- Leu Pro Met Asp Pro Lys Lys Leu Ala Pro Phe Ser Gly Val Lys 1145 1150 1155
- Gln Glu Gln Leu Ser Pro Arg Gly Gln Ala Gly Pro Pro Glu Ser 1160 1165 1170
- Leu Gly Val Pro Thr Ala Gln Glu Ala Ser Val Leu Arg Gly Thr 1175 1180 1185
- Ala Leu Gly Ser Val Pro Gly Gly Ser Ile Thr Lys Gly Ile Pro Page 15

1133 1200

| Ser | Thr<br>1205 | Arg | Val | Pro | Ser | Asp<br>1210 |     | Ala | Ile | Thr | Tyr<br>1215 |     | Gly | Ser |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|
| Ile | Thr<br>1220 | His | Gly | Thr | Pro | Ala<br>1225 | Asp | Val | Leu | Tyr | Lys<br>1230 | Gly | Thr | Ile |
| Thr | Arg<br>1235 | Ile | Ile | Gly | Glu | Asp<br>1240 | Ser | Pro | Ser | Arg | Leu<br>1245 |     | Arg | Gly |
| Arg | Glu<br>1250 | Asp | Ser | Leu | Pro | Lys<br>1255 | Gly | His | Val | Ile | Tyr<br>1260 |     | Gly | Lys |
| Lys | Gly<br>1265 | His | Val | Leu | Ser | Tyr<br>1270 |     | Gly | Gly | Met | Ser<br>1275 | Val | Thr | Gln |
| Cys | Ser<br>1280 | Lys | Glu | Asp |     | Arg<br>1285 |     | Ser | Ser |     | Pro<br>1290 | Pro | His | Glu |
| Thr | Ala<br>1295 | Ala | Pro | Lys | Arg | Thr<br>1300 | Tyr | Asp | Met | Met | Glu<br>1305 | Gly | Arg | Val |
| Gly | Arg<br>1310 | Ala | Ile | Ser | Ser | Ala<br>1315 | Ser | Ile | Glu |     | Leu<br>1320 | Met | Gly | Arg |
| Ala | Ile<br>1325 | Pro | Pro | Glu | Arg | His<br>1330 |     | Pro | His | His | Leu<br>1335 | Lys | Glu | Gln |
| His | His<br>1340 | Ile | Arg | Gly | Ser | Ile<br>1345 | Thr | Gln | Gly | Ile | Pro<br>1350 | Arg | Ser | Tyr |
| Val | Glu<br>1355 | Ala | Gln | Glu |     | Tyr<br>1360 |     | Arg | Arg |     | Ala<br>1365 | Lys | Leu | Leu |
| Lys | Arg<br>1370 | Glu | Gly | Thr | Pro | Pro<br>1375 |     | Pro | Pro |     | Ser<br>1380 | Arg | Asp | Leu |
| Thr | Glu<br>1385 | Ala | Tyr | Lys | Thr | Gln<br>1390 | Ala | Leu | Gly | Pro | Leu<br>1395 | Lys | Leu | Lys |
| Pro | Ala<br>1400 | His | Glu | Gly | Leu | Val<br>1405 | Ala | Thr | Val | Lys | Glu<br>1410 | Ala | Gly | Arg |
| Ser | Ile<br>1415 | His | Glu | Ile | Pro | Arg<br>1420 | Glu | Glu | Leu | Arg | His<br>1425 | Thr | Pro | Glu |
|     | Pro<br>1430 | Leu | Ala | Pro | Arg | Pro<br>1435 | Leu | Lys | Glu | Gly | Ser<br>1440 | Ile | Thr | Gln |
| Gly | Thr<br>1445 | Pro | Leu | Lys | Tyr | Asp<br>1450 | Thr | Gly | Ala | Ser | Thr<br>1455 | Thr | Gly | Ser |

- Lys Lys His Asp Val Arg Ser Leu Ile Gly Ser Pro Gly Arg Thr 1460 1465 1470
- Phe Pro Pro Val His Pro Leu Asp Val Met Ala Asp Ala Arg Ala 1475 1480 1485
- Leu Glu Arg Ala Cys Tyr Glu Glu Ser Leu Lys Ser Arg Pro Gly 1490 1495 1500
- Thr Ala Ser Ser Ser Gly Gly Ser Ile Ala Arg Gly Ala Pro Val 1505 1510 1515
- Ile Val Pro Glu Leu Gly Lys Pro Arg Gln Ser Pro Leu Thr Tyr 1520 1525 1530
- Glu Asp His Gly Ala Pro Phe Ala Gly His Leu Pro Arg Gly Ser 1535 1540 1545
- Pro Val Thr Met Arg Glu Pro Thr Pro Arg Leu Gln Glu Gly Ser 1550 1555 1560
- Leu Ser Ser Ser Lys Ala Ser Gln Asp Arg Lys Leu Thr Ser Thr 1565 1570 1575
- Pro Arg Glu Ile Ala Lys Ser Pro His Ser Thr Val Pro Glu His 1580 1585 1590
- His Pro His Pro Ile Ser Pro Tyr Glu His Leu Leu Arg Gly Val 1595 1600 1605
- Ser Gly Val Asp Leu Tyr Arg Ser His Ile Pro Leu Ala Phe Asp 1610 1615 1620
- Pro Thr Ser Ile Pro Arg Gly Ile Pro Leu Asp Ala Ala Ala Ala 1625 1630 1635
- Tyr Tyr Leu Pro Arg His Leu Ala Pro Asn Pro Thr Tyr Pro His 1640 1645 1650
- Leu Tyr Pro Pro Tyr Leu Ile Arg Gly Tyr Pro Asp Thr Ala Ala 1655 1660 1665
- Leu Glu Asn Arg Gln Thr Ile Ile Asn Asp Tyr Ile Thr Ser Gln 1670 1675 1680
- Gln Met His His Asn Thr Ala Thr Ala Met Ala Gln Arg Ala Asp 1685 1690 1695
- Met Leu Arg Gly Leu Ser Pro Arg Glu Ser Ser Leu Ala Leu Asn 1700 1705 1710
- Tyr Ala Ala Gly Pro Arg Gly Ile Ile Asp Leu Ser Gln Val Pro 1715 1720 1725

|     | Leu<br>1730 |     | Val |     |     | Pro<br>1735 | Pro | Thr | Pro | Gly | Thr<br>1740         | Pro | А1а | Tnr |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|---------------------|-----|-----|-----|
| Ala | Met<br>1745 |     | Arg | Leu |     | Tyr<br>1750 | Leu | Pro | Thr | Ala | Pro<br>1755         | Gln | Pro | Phe |
| Ser | Ser<br>1760 |     | His | Ser | Ser | Ser<br>1765 | Pro | Leu | Ser | Pro | Gly<br>1770         | Gly | Pro | Thr |
| His | Leu<br>1775 | Thr | Lys | Pro |     | Thr<br>1780 | Thr | Ser | Ser | Ser | Glu<br>1785         | Arg | Glu | Arg |
|     | Arg<br>1790 |     | Arg | Glu |     | Asp<br>1795 | Arg | Asp | Arg | Glu | Arg<br>1800         | Glu | Lys | Ser |
| Ile | Leu<br>1805 |     | Ser | Thr | Thr | Thr<br>1810 |     | Glu | His |     | Pro<br>1815         | Ile | Trp | Arg |
| Pro | Gly<br>1820 |     | Glu | Gln | Ser | Ser<br>1825 | Gly | Ser | Ser | Gly | Ser<br>1830         | Ser | Gly | Gly |
| Gly | Gly<br>1835 |     | Ser | Ser | Ser | Arg<br>1840 | Pro | Ala | Ser | His | Ser<br>1845         | His | Ala | His |
| Gln | His<br>1850 |     | Pro | Ile |     | Pro<br>1855 | Arg | Thr | Gln | Asp | Ala<br>1860         | Leu | Gln | Gln |
| Arg | Pro<br>1865 |     | Val | Leu |     | Asn<br>1870 | Thr | Gly | Met | Lys | Gly<br>1875         | Ile | Ile | Thr |
|     | Val<br>1880 |     |     |     |     | 1885        |     |     |     |     | 1890                |     |     |     |
|     | Ser<br>1895 |     |     |     |     | 1900        |     |     |     |     | 1905                |     |     |     |
|     | Pro<br>1910 |     |     |     |     | 1915        |     |     |     |     | 1920                |     |     |     |
|     | Pro<br>1925 |     |     |     |     | 1930        |     |     |     |     | 1935                |     |     |     |
|     | Arg<br>1940 |     |     |     |     | 1945        |     |     |     |     | 1950                |     |     |     |
|     | Ala<br>1955 |     |     |     |     | 1960        |     |     |     |     | 1965                |     |     |     |
|     | Glu<br>1970 |     |     |     |     | 1975        |     |     |     |     | 1980                |     |     |     |
| Ile | Ala<br>1985 |     | Thr | Pro | Ala | Lys<br>1990 |     | Leu | Ala |     | His<br>1995<br>e 18 | HIS | ATa | ser |
|     |             |     |     |     |     |             |     |     |     |     |                     |     |     |     |

|     | 2000        | m 1 | Cl= | 50× |     | 2005<br>Pro | Pho | Ser | Tle   |     | 2010<br>Glu | Len | Glu   | Leu |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-------|-----|-------------|-----|-------|-----|
|     | 2015        |     |     |     |     | 2020        |     |     |       |     | 2025        |     |       |     |
|     | Ser<br>2030 | Leu | Gly | Tyr | His | Gly<br>2035 | Ser | Ser | Tyr   | Ser | Pro<br>2040 | Glu | Gly   | Val |
|     | Pro<br>2045 | Val | Ser | Pro | Val | Ser<br>2050 | Ser | Pro | Ser   | Leu | Thr<br>2055 | His | Asp   | Lys |
|     | Leu<br>2060 | Pro | Lys | His | Leu | Glu<br>2065 | Glu | Leu | Asp   | Lys | Ser<br>2070 | His | Leu   | Glu |
|     | Glu<br>2075 | Leu | Arg | Pro | Lys | Gln<br>2080 | Pro | Gly | Pro   | Val | Lys<br>2085 | Leu | Gly   | Gly |
| Glu | Ala<br>2090 | Ala | His | Leu | Pro | His<br>2095 | Leu | Arg | Pro   | Leu | Pro<br>2100 | Glu | Ser   | Gln |
| Pro | Ser<br>2105 | Ser | Ser | Pro | Leu | Leu<br>2110 | Gln | Thr | Ala   | Pro | Gly<br>2115 | Val | Lys   | Gly |
| His | Gln<br>2120 | Arg | Val | Val | Thr | Leu<br>2125 | Ala | Gln | His   | Ile | Ser<br>2130 | Glu | .Val  | Ile |
| Thr | Gln<br>2135 |     | Tyr | Thr | Arg | His<br>2140 | His | Pro | Gln   | Gln | Leu<br>2145 | Ser | Ala   | Pro |
| Leu | Pro<br>2150 |     | Pro | Leu | Tyr | Ser<br>2155 | Phe | Pro | Gly   | Ala | Ser<br>2160 | Cys | Pro   | Val |
| Leu | Asp<br>2165 |     | Arg | Arg | Pro | Pro<br>2170 | Ser | Asp | Leu   | Tyr | Leu<br>2175 | Pro | Pro   | Pro |
| Asp | His<br>2180 |     | Ala | Pro | Ala | Arg<br>2185 | Gly | Ser | Pro   | His | Ser<br>2190 | Glu | Gly   | Gly |
| Lys | Arg<br>2195 |     | Pro | Glu | Pro | Asn<br>2200 | Lys | Thr | Ser   | Val | Leu<br>2205 | Gly | Gly   | Gly |
| Glu | Asp<br>2210 |     | Ile | Glu | Pro | Val<br>2215 | Ser | Pro | Pro   | Glu | Gly<br>2220 | Met | . Thr | Glu |
| Pro | Gly<br>2225 |     | Ser | Arg | Ser | Ala<br>2230 | Val | Tyr | Pro   | Leu | Leu<br>2235 | Туг | : Arg | Asp |
| Gly | Glu<br>2240 |     | Thr | Glu | Pro | Ser<br>2245 |     | Met | : Gly | Ser | Lys<br>2250 | Sei | : Pro | Gly |
| Asn | Thr         | Ser | Gln | Pro | Pro | Ala         | Phe | Phe | e Ser |     | E Leu       | Thi | : Glu | Ser |

2265 2260 2255

Asn Ser Ala Met Val Lys Ser Lys Lys Gln Glu Ile Asn Lys Lys 2275 2270

Leu Asn Thr His Asn Arg Asn Glu Pro Glu Tyr Asn Ile Ser Gln 2290

Pro Gly Thr Glu Ile Phe Asn Met Pro Ala Ile Thr Gly Thr Gly 2305

Leu Met Thr Tyr Arg Ser Gln Ala Val Gln Glu His Ala Ser Thr 2320 2315

Asn Met Gly Leu Glu Ala Ile Ile Arg Lys Ala Leu Met Gly Lys 2335 2330

Tyr Asp Gln Trp Glu Glu Ser Pro Pro Leu Ser Ala Asn Ala Phe 2350

Asn Pro Leu Asn Ala Ser Ala Ser Leu Pro Ala Ala Met Pro Ile 2365 2370

Thr Ala Ala Asp Gly Arg Ser Asp His Thr Leu Thr Ser Pro Gly 2380 2375

Gly Gly Lys Ala Lys Val Ser Gly Arg Pro Ser Ser Arg Lys 2395 2390

Ala Lys Ser Pro Ala Pro Gly Leu Ala Ser Gly Asp Arg Pro Pro 2410

Ser Val Ser Ser Val His Ser Glu Gly Asp Cys Asn Arg Arg Thr 2430 2420

Pro Leu Thr Asn Arg Val Trp Glu Asp Arg Pro Ser Ser Ala Gly 2445 2440

Ser Thr Pro Phe Pro Tyr Asn Pro Leu Ile Met Arg Leu Gln Ala 2455

Gly Val Met Ala Ser Pro Pro Pro Pro Gly Leu Pro Ala Gly Ser 2470 2465

Gly Pro Leu Ala Gly Pro His His Ala Trp Asp Glu Glu Pro Lys 2485 2480

Pro Leu Leu Cys Ser Gln Tyr Glu Thr Leu Ser Asp Ser Glu 2505

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|                         |                                       |    |
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|                         |                                       |    |
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|                         | Altilitia bedaense                    |    |
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| gaagat                  | .ggcg acgggactio                      |    |
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| <400>                   | 11                                    | 20 |
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**WO** 03/106645

PCT/US03/18923

49

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20 25 30

acg cac acg gac gtc ggg ctc ctg gag tac cag cac cac tcc cgc gac 145
Thr His Thr Asp Val Gly Leu Leu Glu Tyr Gln His His Ser Arg Asp
35 40 45

tat gcc tcc cac ctg tcg ccg ggc tcc atc atc cag ccc cag cgg cgg

Tyr Ala Ser His Leu Ser Pro Gly Ser Ile Ile Gln Pro Gln Arg Arg

50

60

agg ccc tcc ctg ctg tct gag ttc cag ccc ggg aat gaa cgg tcc cag

Arg Pro Ser Leu Leu Ser Glu Phe Gln Pro Gly Asn Glu Arg Ser Gln

70

75

80

gag ctc cac ctg cgg cca gag tcc cac tca tac ctg ccc gag ctg ggg
Glu Leu His Leu Arg Pro Glu Ser His Ser Tyr Leu Pro Glu Leu Gly

aag tca gag atg gag ttc att gaa agc aag cgc cct cgg cta gag ctg

1337

Lys Ser Glu Met Glu Phe Ile Glu Ser Lys Arg Pro Arg Leu Glu Leu

105

ctg cct gac ccc ctg ctg cga ccg tca ccc ctg ctg gcc acg ggc cag
Leu Pro Asp Pro Leu Leu Arg Pro Ser Pro Leu Leu Ala Thr Gly Gln
115 120 125

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Pro Ala Gly Ser Glu Asp Leu Thr Lys Asp Arg Ser Leu Thr Gly Lys
130
140

ctg gaa ccg gtg tct tcc ccc agc ccc ccg cac act gac cct gag ctg
Leu Glu Pro Val Ser Pro Pro Ser Pro Pro His Thr Asp Pro Glu Leu
155 160

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Glu Pro Glu Lys Pro Val Ser Pro Pro Pro Ile Glu Ser Lys His Arg
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gca cat cgg att ctg gaa ggc ctg ggg ccc cag gtg gag ctg ccg ctg 769
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245 250 255

| tac<br>Tyr        | aac<br>Asn        | cag<br>Gln        | ccc<br>Pro<br>260 | tcc<br>Ser        | gac<br>Asp        | acc<br>Thr        | cgg<br>Arg        | cag<br>Gln<br>265 | tat<br>Tyr        | cat<br>His        | gag<br>Glu        | aac<br>Asn        | atc<br>Ile<br>270 | aaa<br>Lys        | ata<br>Ile        | 817  |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| aac<br>Asn        | cag<br>Gln        | gcg<br>Ala<br>275 | atg<br>Met        | cgg<br>Arg        | aag<br>Lys        | aag<br>Lys        | cta<br>Leu<br>280 | atc<br>Ile        | ttg<br>Leu        | tac<br>Tyr        | ttc<br>Phe        | aag<br>Lys<br>285 | agg<br>Arg        | agg<br>Arg        | aat<br>Asn        | 865  |
| cac<br>His        | gct<br>Ala<br>290 | cgg<br>Arg        | aaa<br>Lys        | caa<br>Gln        | tgg<br>Trp        | aag<br>Lys<br>295 | cag<br>Gln        | aag<br>Lys        | ttc<br>Phe        | tgc<br>Cys        | cag<br>Gln<br>300 | cgc<br>Arg        | tat<br>Tyr        | gac<br>Asp        | cag<br>Gln        | 913  |
| ctc<br>Leu<br>305 | atg<br>Met        | gag<br>Glu        | gcc<br>Ala        | ttg<br>Leu        | gaa<br>Glu<br>310 | aaa<br>Lys        | aag<br>Lys        | gtg<br>Val        | gag<br>Glu        | cgc<br>Arg<br>315 | atc<br>Ile        | gaa<br>Glu        | aac<br>Asn        | aac<br>Asn        | ccg<br>Pro<br>320 | 961  |
| cgc<br>Arg        | cgg<br>Arg        | cgg<br>Arg        | gcc<br>Ala        | aag<br>Lys<br>325 | gag<br>Glu        | agc<br>Ser        | aag<br>Lys        | gtg<br>Val        | cgc<br>Arg<br>330 | gag<br>Glu        | tac<br>Tyr        | tac<br>Tyr        | gaa<br>Glu        | aag<br>Lys<br>335 | cag<br>Gln        | 1009 |
| ttc<br>Phe        | cct<br>Pro        | gag<br>Glu        | atc<br>Ile<br>340 | cgc<br>Arg        | aag<br>Lys        | cag<br>Gln        | cgc<br>Arg        | gag<br>Glu<br>345 | ctg<br>Leu        | cag<br>Gln        | gag<br>Glu        | cgc<br>Arg        | atg<br>Met<br>350 | cag<br>Gln        | agc<br>Ser        | 1057 |
| agg<br>Arg        | gtg<br>Val        | ggc<br>Gly<br>355 | cag<br>Gln        | cgg<br>Arg        | ggc<br>Gly        | agt<br>Ser        | ggg<br>Gly<br>360 | ctg<br>Leu        | tcc<br>Ser        | atg<br>Met        | tcg<br>Ser        | gcc<br>Ala<br>365 | gcc<br>Ala        | cgc<br>Arg        | agc<br>Ser        | 1105 |
| gag<br>Glu        | cac<br>His<br>370 | gag<br>Glu        | gtg<br>Val        | tca<br>Ser        | gag<br>Glu        | atc<br>Ile<br>375 | atc<br>Ile        | gat<br>Asp        | ggc<br>Gly        | ctc<br>Leu        | tca<br>Ser<br>380 | gag<br>Glu        | cag<br>Gln        | gag<br>Glu        | aac<br>Asn        | 1153 |
| ctg<br>Leu<br>385 | Glu               | aag<br>Lys        | cag<br>Gln        | atg<br>Met        | cgc<br>Arg<br>390 | cag<br>Gln        | ctg<br>Leu        | gcc<br>Ala        | gtg<br>Val        | atc<br>Ile<br>395 | ccg<br>Pro        | ccc<br>Pro        | atg<br>Met        | ctg<br>Leu        | tac<br>Tyr<br>400 | 1201 |
| gac<br>Asp        | gct<br>Ala        | gac<br>Asp        | cag<br>Gln        | cag<br>Gln<br>405 | cgc<br>Arg        | atc<br>Ile        | aag<br>Lys        | ttc<br>Phe        | atc<br>Ile<br>410 | aac<br>Asn        | atg<br>Met        | aac<br>Asn        | Gly               | ctt<br>Leu<br>415 | atg<br>Met        | 1249 |
| gcc<br>Ala        | gac<br>Asp        | ccc<br>Pro        | atg<br>Met<br>420 | aag<br>Lys        | gtg<br>Val        | tac<br>Tyr        | aaa<br>Lys        | gac<br>Asp<br>425 | cgc<br>Arg        | cag<br>Gln        | gtc<br>Val        | atg<br>Met        | aac<br>Asn<br>430 | Met               | tgg<br>Trp        | 1297 |
| agt<br>Ser        | gag<br>Glu        | cag<br>Gln<br>435 | Glu               | aag<br>Lys        | gag<br>Glu        | acc<br>Thr        | ttc<br>Phe<br>440 | cgg<br>Arg        | gag<br>Glu        | aag<br>Lys        | ttc<br>Phe        | atg<br>Met<br>445 | Gin               | cat<br>His        | ccc<br>Pro        | 1345 |
| aag<br>Lys        | aac<br>Asn<br>450 | Phe               | ggc               | ctg<br>Leu        | atc<br>Ile        | gca<br>Ala<br>455 | Ser               | ttc<br>Phe        | ctg<br>Leu        | gag<br>Glu        | agg<br>Arg<br>460 | гÀг               | aca<br>Thr        | gtg<br>Val        | gct<br>Ala        | 1393 |
| gag<br>Glu<br>465 | ı Cys             | gto<br>Val        | cto<br>Leu        | tat<br>Tyr        | tac<br>Tyr<br>470 | Tyr               | ctg<br>Leu        | act<br>Thr        | aag<br>Lys        | aag<br>Lys<br>475 | Asn               | gag<br>Glu        | aac<br>Asn        | tat<br>Tyr        | aag<br>Lys<br>480 | 1441 |
| ago<br>Ser        | ctg<br>Leu        | gtg<br>Val        | aga<br>Arg        | cgg<br>Arg<br>485 | Ser               | tat<br>Tyr        | cgg<br>Arg        | cgc<br>Arg        | Arg<br>490        | CTA               | aag<br>Lys        | ago<br>Ser        | cag<br>Gln        | cag<br>Gln<br>495 | caa<br>Gln        | 1489 |
| caa<br>Glr        | cag<br>Gln        | cag<br>Glr        | cag<br>Glr<br>500 | Gln               | cag<br>Gln        | cag<br>Gln        | cag<br>Glr        | cag<br>Gln<br>505 | Glr               | cag<br>Glr        | g cag<br>n Glm    | caç<br>Glr        | cac<br>Glr<br>510 | PEC               | atg<br>Met        | 1537 |
| cco<br>Pro        | c cgc             | ago<br>Ser<br>515 | : Sei             | cag<br>Glr        | gag<br>Glu        | gaç<br>Glu        | aaa<br>Lys<br>520 | 3 Asp             | gag<br>Glu        | g aag<br>Lys      | g gag<br>s Glu    | aag<br>Lys<br>525 | 3 GTI             | a aag<br>1 Lys    | g gag<br>s Glu    | 1585 |
| gcç<br>Ala        | g gag<br>a Glu    | aaq<br>Lys        | g gag<br>s Glu    | g gaç<br>ı Glu    | g gag<br>ı Glu    | aaç<br>Lys        | cco<br>Pro        | g gag<br>o Glu    | g gto<br>1 Val    | g gaq<br>L Glu    | g aac<br>ı Asr    | gad<br>Asp        | c aaq<br>o Lys    | g gaa<br>s Glu    | a gac<br>ı Asp    | 1633 |

|                   | 530               |                   |                   |                      |                       | 535                 |                       |                   |                    |                    | 540               |                     |                   |                    |                       |      |
|-------------------|-------------------|-------------------|-------------------|----------------------|-----------------------|---------------------|-----------------------|-------------------|--------------------|--------------------|-------------------|---------------------|-------------------|--------------------|-----------------------|------|
| ctc<br>Leu<br>545 | ctc<br>Leu        | aag<br>Lys        | gag<br>Glu        | aag<br>Lys           | aca<br>Thr<br>550     | gac<br>Asp          | gac<br>Asp            | acc<br>Thr        | tca<br>Ser         | ggg<br>Gly<br>555  | gag<br>Glu        | gac<br>Asp          | aac<br>Asn        | gac<br>Asp         | gag<br>Glu<br>560     | 1681 |
| aag<br>Lys        | gag<br>Glu        | gct<br>Ala        | gtg<br>Val        | gcc<br>Ala<br>565    | tcc<br>Ser            | aaa<br>Lys          | ggc<br>Gly            | cgc<br>Arg        | aaa<br>Lys<br>570  | act<br>Thr         | gcc<br>Ala        | aac<br>Asn          | agc<br>Ser        | cag<br>Gln<br>575  | gga<br>Gly            | 1729 |
| aga<br>Arg        | cgc<br>Arg        | aaa<br>Lys        | ggc<br>Gly<br>580 | cgc<br>Arg           | atc<br>Ile            | acc<br>Thr          | cgc<br>Arg            | tca<br>Ser<br>585 | atg<br>Met         | gct<br>Ala         | aat<br>Asn        | gag<br>Glu          | gcc<br>Ala<br>590 | aac<br>Asn         | agc<br>Ser            | 1777 |
| gag<br>Glu        | gag<br>Glu        | gcc<br>Ala<br>595 | atc<br>Ile        | acc<br>Thr           | ccc<br>Pro            | cag<br>Gln          | cag<br>Gln<br>600     | agc<br>Ser        | gcc<br>Ala         | gag<br>Glu         | ctg<br>Leu        | gcc<br>Ala<br>605   | tcc<br>Ser        | atg<br>Met         | gag<br>Glu            | 1825 |
| ctg<br>Leu        | aat<br>Asn<br>610 | gag<br>Glu        | agt<br>Ser        | tct<br>Ser           | cgc<br>Arg            | tgg<br>Trp<br>615   | aca<br>Thr            | gaa<br>Glu        | gaa<br>Glu         | gaa<br>Glu         | atg<br>Met<br>620 | gaa<br>Glu          | aca<br>Thr        | gcc<br>Ala         | aag<br>Lys            | 1873 |
| aaa<br>Lys<br>625 | ggt<br>Gly        | ctc<br>Leu        | ctg<br>Leu        | gaa<br>Glu           | cac<br>His<br>630     | ggc<br>Gly          | cgc<br>Arg            | aac<br>Asn        | tgg<br>Trp         | tcg<br>Ser<br>635  | gcc<br>Ala        | atc<br>Ile          | gcc<br>Ala        | cgg<br>Arg         | atg<br>Met<br>640     | 1921 |
| gtg<br>Val        | ggc<br>Gly        | tcc<br>Ser        | aag<br>Lys        | act<br>Thr<br>645    | gtg<br>Val            | tcg<br>Ser          | cag<br>Gln            | tgt<br>Cys        | aag<br>Lys<br>650  | aac<br>Asn         | ttc<br>Phe        | tac<br>Tyr          | ttc<br>Phe        | aac<br>Asn<br>655  | tac<br>Tyr            | 1969 |
| aag<br>Lys        | aag<br>Lys        | agg<br>Arg        | cag<br>Gln<br>660 | aac<br>Asn           | ctc<br>Leu            | gat<br>Asp          | gag<br>Glu            | atc<br>Ile<br>665 | ttg<br>Leu         | cag<br>Gln         | cag<br>Gln        | cac<br>His          | aag<br>Lys<br>670 | ctg<br>Leu         | aag<br>Lys            | 2017 |
| atg<br>Met        | gag<br>Glu        | aag<br>Lys<br>675 | Glu               | agg<br>Arg           | aac<br>Asn            | gcg<br>Ala          | cgg<br>Arg<br>680     | agg<br>Arg        | aag<br>Lys         | aag<br>Lys         | aag<br>Lys        | aaa<br>Lys<br>685   | gcg<br>Ala        | ccg<br>Pro         | gcg<br>Ala            | 2065 |
| gcg<br>Ala        | gcc<br>Ala<br>690 | Ser               | gag<br>Glu        | gag<br>Glu           | gct<br>Ala            | gca<br>Ala<br>695   | Phe                   | ccg<br>Pro        | ccc<br>Pro         | gtg<br>Val         | gtg<br>Val<br>700 | GIU                 | gat<br>Asp        | gag<br>Glu         | gag<br>Glu            | 2113 |
| atg<br>Met<br>705 | Glu               | gcg<br>Ala        | tcg<br>Ser        | ggc                  | gtg<br>Val<br>710     | Ser                 | gga<br>Gly            | aat<br>Asn        | gag<br>Glu         | gag<br>Glu<br>715  | GIU               | atg<br>Met          | gtg<br>Val        | gag<br>Glu         | gag<br>Glu<br>720     | 2161 |
| gct<br>Ala        | gaa<br>Glu        | gcc<br>Ala        | tta<br>Leu        | His                  | gcc<br>Ala            | Ser                 | Gly                   | aat<br>Asn        | gag<br>Glu<br>730  | Val                | ccc<br>Pro        | aga<br>Arg          | Gly               | gaa<br>Glu<br>735  | tgc<br>Cys            | 2209 |
| agt<br>Ser        | ggc               | cca<br>Pro        | gcc<br>Ala<br>740 | Thr                  | gtc<br>Val            | aac<br>Asr          | aac<br>Asn            | ago<br>Ser<br>745 | Ser                | gac<br>Asp         | aco<br>Thi        | gag<br>Glu          | ago<br>Ser<br>750 | TTE                | ccc<br>Pro            | 2257 |
| tct<br>Ser        | cct               | cac<br>His        | Thr               | gaç<br>Glu           | gcc<br>Ala            | gco<br>Ala          | 2 aag<br>2 Lys<br>760 | Asp               | aca<br>Thr         | Gly<br>Gg          | g caq<br>/ Glr    | aat<br>n Asn<br>765 | r GTA             | Pro                | aag<br>Lys            | 2305 |
| ccc<br>Pro        | cca<br>Pro<br>770 | ) Ala             | a acc             | c cto<br>Lei         | g ggc<br>ı Gly        | gco<br>7 Ala<br>775 | a Asp                 | Gly               | r cca              | o Pro              | 780               | o GTZ               | cca<br>Pro        | cco<br>Pro         | acc<br>Thr            | 2353 |
| cca<br>Pro<br>785 | Pro               | a cg              | g ago             | g aca<br>g Thi       | a tco<br>c Ser<br>790 | : Ar                | g gco<br>g Ala        | e cco             | atto Ile           | gaq<br>e Gli<br>79 | u Pr              | c acc               | c ccg             | g gco<br>Ala       | s tct<br>a Ser<br>800 | 2401 |
| gaa<br>Glu        | a gco<br>ı Ala    | a Th              | c gga<br>r Gl     | a gce<br>y Ala<br>80 | a Pro                 | ac<br>Th            | g cc<br>r Pr          | c cca             | e cca<br>Pro<br>81 | O AT               | a cc<br>a Pr      | c cca               | a tcg<br>o Se:    | g cc<br>r Pr<br>81 | c tct<br>o Ser<br>5   | 2449 |
| gca               | a cc              | t cc              | t cc              | t gt                 | g gto                 | c cc                | c aa                  | g ga              | g ga               |                    | g ga<br>Page      |                     | g ga              | g ac               | c gca                 | 2497 |

| i | Ala               | Pro               | Pro               | Pro<br>820        | Val               | Val               | Pro               | Lys                | Glu<br>825        | Glu                   | Lys               | Glu               | Glu                | Glu<br>830        | Thr               | Ala               |      |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-----------------------|-------------------|-------------------|--------------------|-------------------|-------------------|-------------------|------|
| ; | gca<br>Ala        | gcg<br>Ala        | ccc<br>Pro<br>835 | cca<br>Pro        | gtg<br>Val        | gag<br>Glu        | gag<br>Glu        | ggg<br>Gly<br>840  | gag<br>Glu        | gag<br>Glu            | cag<br>Gln        | aag<br>Lys        | ccc<br>Pro<br>845  | ccc<br>Pro        | gcg<br>Ala        | gct<br>Ala        | 2545 |
| , | gag<br>Glu        | gag<br>Glu<br>850 | ctg<br>Leu        | gca<br>Ala        | gtg<br>Val        | gac<br>Asp        | aca<br>Thr<br>855 | Gly<br>ggg         | aag<br>Lys        | gcc<br>Ala            | gag<br>Glu        | gag<br>Glu<br>860 | ccc<br>Pro         | gtc<br>Val        | aag<br>Lys        | agc<br>Ser        | 2593 |
|   | gag<br>Glu<br>865 | tgc<br>Cys        | acg<br>Thr        | gag<br>Glu        | gaa<br>Glu        | gcc<br>Ala<br>870 | gag<br>Glu        | gag<br>Glu         | Gly               | ccg<br>Pro            | gcc<br>Ala<br>875 | aag<br>Lys        | ggc<br>Gly         | aag<br>Lys        | gac<br>Asp        | gcg<br>Ala<br>880 | 2641 |
|   | gag<br>Glu        | gcc<br>Ala        | gct<br>Ala        | gag<br>Glu        | gcc<br>Ala<br>885 | acg<br>Thr        | gcc<br>Ala        | gag<br>Glu         | Gly               | gcg<br>Ala<br>890     | ctc<br>Leu        | aag<br>Lys        | gca<br>Ala         | gag<br>Glu        | aag<br>Lys<br>895 | aag<br>Lys        | 2689 |
|   | gag<br>Glu        | ggc<br>Gly        | Gly<br>ggg        | agc<br>Ser<br>900 | ggc<br>Gly        | agg<br>Arg        | gcc<br>Ala        | acc<br>Thr         | act<br>Thr<br>905 | gcc<br>Ala            | aag<br>Lys        | agc<br>Ser        | tcg<br>Ser         | ggc<br>Gly<br>910 | gcc<br>Ala        | ccc<br>Pro        | 2737 |
|   | cag<br>Gln        | gac<br>Asp        | agc<br>Ser<br>915 | gac<br>Asp        | tcc<br>Ser        | agt<br>Ser        | gct<br>Ala        | acc<br>Thr<br>920  | tgc<br>Cys        | agt<br>Ser            | gca<br>Ala        | gac<br>Asp        | gag<br>Glu<br>925  | gtg<br>Val        | gat<br>Asp        | gag<br>Glu        | 2785 |
|   | gcc<br>Ala        | gag<br>Glu<br>930 | ggc<br>Gly        | ggc<br>Gly        | gac<br>Asp        | aag<br>Lys        | aac<br>Asn<br>935 | cgg<br>Arg         | ctg<br>Leu        | ctg<br>Leu            | tcc<br>Ser        | cca<br>Pro<br>940 | Arg                | ccc<br>Pro        | agc<br>Ser        | ctc<br>Leu        | 2833 |
|   | ctc<br>Leu<br>945 | acc<br>Thr        | ccg<br>Pro        | act<br>Thr        | Gly               | gac<br>Asp<br>950 | ccc<br>Pro        | cgg<br>Arg         | gcc<br>Ala        | aat<br>Asn            | gcc<br>Ala<br>955 | tca<br>Ser        | ccc<br>Pro         | cag<br>Gln        | aag<br>Lys        | cca<br>Pro<br>960 | 2881 |
|   | ctg<br>Leu        | gac<br>Asp        | ctg<br>Leu        | aag<br>Lys        | cag<br>Gln<br>965 | ctg<br>Leu        | aag<br>Lys        | cag<br>Gln         | cga<br>Arg        | gcg<br>Ala<br>970     | gct<br>Ala        | gcc<br>Ala        | atc<br>Ile         | ccc<br>Pro        | ccc<br>Pro<br>975 | Ile               | 2929 |
|   | cag<br>Gln        | gtc<br>Val        | acc<br>Thr        | aaa<br>Lys<br>980 | Val               | cat<br>His        | gag<br>Glu        | ccc<br>Pro         | ccc<br>Pro<br>985 | Arg                   | gag<br>Glu        | gac<br>Asp        | gca<br>Ala         | gct<br>Ala<br>990 | Pro               | acc<br>Thr        | 2977 |
|   | aag<br>Lys        | cca<br>Pro        | gct<br>Ala<br>995 | Pro               | cca<br>Pro        | gcc<br>Ala        | cca<br>Pro        | ccg<br>Pro<br>100  | Pr                | a cc<br>o Pr          | g ca<br>o Gl      | a aa<br>n As      | n Le               | g c<br>u G<br>05  |                   | cg gag<br>ro Glu  | 3025 |
|   | agc<br>Ser        | gac<br>Asp<br>101 | Al                | c cc<br>a Pr      | o Gl              | g ca<br>n Gl      | n Pr              | t g<br>o G<br>15   | gc a<br>ly S      | gc a<br>Ser S         | gc c<br>er F      | ro P              | gg<br>Arg<br>L020  |                   | aag<br>Lys        |                   | 3070 |
|   | agg<br>Arg        | agc<br>Ser<br>102 | Pr                | g gc<br>o Al      | a cc<br>a Pr      | c cc<br>o Pr      | o Al              | с g<br>a A<br>30   | ac a<br>sp I      | ys G                  | gag g<br>Slu A    | la E              | tc<br>Phe<br>1035  | gca<br>Ala        | gcc<br>Ala        | gag<br>Glu        | 3115 |
|   | gcc<br>Ala        | cag<br>Gln<br>104 | Ьy                | g ct<br>s Le      | g cc<br>u Pr      | t gg<br>o Gl      | y As              | c c<br>p P<br>45   | cc c              | ct t<br>Pro C         | gc t<br>Cys T     | rp 1              | act<br>Thr<br>1050 | tcc<br>Ser        | ggc<br>Gly        | ctg<br>Leu        | 3160 |
|   | ccc<br>Pro        | ttc<br>Phe<br>105 | Pr                | c gt<br>o Va      | g co<br>l Pr      | c cc<br>o Pr      | o Ar              | t g<br>g 6         | ag g<br>Slu V     | gtg a<br>Val 1        | itc a<br>[le ]    | ys 1              | gcc<br>Ala<br>1065 | tcc<br>Ser        | ccg<br>Pro        | cat<br>His        | 3205 |
|   | gcc<br>Ala        | ccg<br>Pro<br>107 | As                | c cc<br>p Pr      | c to<br>co Se     | a go<br>r Al      | a Ph              | c t<br>ie 5<br>175 | cc t<br>Ser 1     | ac q<br>Tyr <i>I</i>  | gct d<br>Ala 1    | ?ro               | cct<br>Pro<br>1080 | ggt<br>Gly        | cac<br>His        | cca<br>Pro        | 3250 |
|   |                   | ccc<br>Pro        | Le                | g gg<br>u Gl      | jc ct<br>.y Le    | c ca<br>eu Hi     | s As              | ic a<br>sp 1       | nct o             | gcc (<br>Ala <i>l</i> | egg (<br>Arg 1    | ero '             | gtc<br>Val<br>1095 | ctg<br>Leu        | ccg<br>Pro        | cgc<br>Arg        | 3295 |

| Pro        | ccc<br>Pro<br>1100 | acc<br>Thr | atc<br>Ile     | tcc<br>Ser | Asn            | ccg<br>Pro<br>1105     | cct<br>Pro | ccc<br>Pro     | ctc<br>Leu     | Iте        | tcc<br>Ser<br>1110    | tct<br>Ser | gcc<br>Ala      | aag<br>Lys     | 3340 |
|------------|--------------------|------------|----------------|------------|----------------|------------------------|------------|----------------|----------------|------------|-----------------------|------------|-----------------|----------------|------|
| His        | ccc<br>Pro<br>1115 | agc<br>Ser | gtc<br>Val     | ctc<br>Leu | gag<br>Glu     | agg<br>Arg<br>1120     | caa<br>Gln | ata<br>Ile     | ggt<br>Gly     | Ата        | atc<br>Ile<br>1125    | tcc<br>Ser | caa<br>Gln      | gga<br>Gly     | 3385 |
| atg<br>Met | tcg<br>Ser<br>1130 | gtc<br>Val | cag<br>Gln     | ctc<br>Leu | His            | gtc<br>Val<br>1135     | ccg<br>Pro | tac<br>Tyr     | tca<br>Ser     | gag<br>Glu | cat<br>His<br>1140    | gcc<br>Ala | aag<br>Lys      | gcc<br>Ala     | 3430 |
| ccg<br>Pro | gtg<br>Val<br>1145 | ggc<br>Gly | cct<br>Pro     | gtc<br>Val | acc<br>Thr     | atg<br>Met<br>1150     | G1y<br>ggg | ctg<br>Leu     | ccc<br>Pro     | ctg<br>Leu | ccc<br>Pro<br>1155    | atg<br>Met | gac<br>Asp      | ccc<br>Pro     | 3475 |
| aaa<br>Lys | aag<br>Lys<br>1160 | Leu        | gca<br>Ala     | ccc<br>Pro | ttc<br>Phe     | agc<br>Ser<br>1165     | gga<br>Gly | gtg<br>Val     | aag<br>Lys     | cag<br>Gln | gag<br>Glu<br>1170    | cag<br>Gln | ctg<br>Leu      | tcc<br>Ser     | 3520 |
| cca<br>Pro | cgg<br>Arg<br>1175 | Gly        | cag<br>Gln     | gct<br>Ala | GJA<br>GGA     | cca<br>Pro<br>1180     | ccg<br>Pro | gag<br>Glu     | agc<br>Ser     | ctg<br>Leu | ggg<br>Gly<br>1185    | gtg<br>Val | ccc<br>Pro      | aca<br>Thr     | 3565 |
| gcc<br>Ala | cag<br>Gln<br>1190 | Glu        | gcg<br>Ala     | tcc<br>Ser | gtg<br>Val     | ctg<br>Leu<br>1195     | aga<br>Arg | GJÀ<br>āāā     | aca<br>Thr     | gct<br>Ala | ctg<br>Leu<br>1200    | GTĀ        | tca<br>Ser      | gtt<br>Val     | 3610 |
| ccg<br>Pro | ggc<br>Gly<br>1205 | Gly        | agc<br>Ser     | atc<br>Ile | acc<br>Thr     | aaa<br>Lys<br>1210     | Gly<br>ggc | att<br>Ile     | ccc<br>Pro     | agc<br>Ser | aca<br>Thr<br>1215    | Arg        | gtg<br>Val      | ccc<br>Pro     | 3655 |
| tcg<br>Ser | gac<br>Asp<br>1220 | Ser        | gcc<br>Ala     | atc<br>Ile | aca<br>Thr     | tac<br>Tyr<br>1225     | Arg        | ggc<br>Gly     | tcc<br>Ser     | atc<br>Ile | acc<br>Thr<br>1230    | His        | Gly             | acg<br>Thr     | 3700 |
| Pro        | Ala<br>1235        | Asp        | Val            | Leu        | Tyr            | aag<br>Lys<br>1240     | Gly        | Thr            | Ile            | Thr        | Arg<br>1245           | TTE        | 11e             | GIÀ            | 3745 |
| Glu        | Asp<br>1250        | Ser        | Pro            | Ser        | Arg            | ttg<br>Leu<br>1255     | Asp        | Arg            | GŢĀ            | Arg        | 1260                  | Asp        | ser             | Leu            | 3790 |
| Pro        | Lys<br>1265        | Gly        | His            | Val        | Ile            | tac<br>Tyr<br>1270     | Glu        | Gly            | · Lys          | Lys        | GLY<br>1275           | HIS        | vaı             | . neu          | 3835 |
| Ser        | Tyr<br>1280        | Glu        | Gly            | Gly        | Met            | tct<br>Ser<br>1285     | Val        | Thr            | : Gin          | . Cys      | 1290                  | рўз        | GIL             | . Asp          | 3880 |
| Gly        | Arg<br>1295        | Ser        | Ser            | Ser        | Gly            | ccc<br>Pro<br>1300     | Pro        | His            | : GIv          | Thr        | 1305                  | AL5        | PIC             | р грдз         | 3925 |
| Arg        | Thr<br>1310        | Tyr<br>)   | : Asp          | ) Met      | : Met          | gag<br>Glu<br>1315     | Gly        | Arg            | ı val          | . GIŞ      | 1320                  | ALE        | 1 TT6           | e ser          | 3970 |
| Ser        | 1325               | Sei        | : Ile          | e Glu      | ı Gly          | ctc<br>Leu<br>1330     | Met<br>)   | : G13          | y Arc          | J Ala      | 1335                  | Pro        | ) Pro           | o Giu          |      |
| Arg        | 1340               | Se:        | r Pro          | His        | 3 His          | c ctc<br>s Leu<br>1345 | Lys        | s Gli          | ı Gli          | 1 HlS      | 1350                  | 0 116      | -               | g Gly<br>c ggg |      |
|            | atc<br>Ile<br>135  | Th:        | a caa<br>r Gli | a ggg      | g ato<br>7 Ile | c cct<br>Pro<br>1360   | Arg        | g tco<br>g Se: | c tac<br>r Ty: | r Va.      | g gag<br>l Glu<br>136 | AL         | a cada<br>a Gl: | g gag<br>n Glu | 4105 |

| gac<br>Asp | tac<br>Tyr<br>1370 | ctg<br>Leu | cgt<br>Arg | cgg<br>Arg | gag<br>Glu | gcc<br>Ala<br>1375 | aag<br>Lys | ctc<br>Leu | cta<br>Leu | aag<br>Lys | cgg<br>Arg<br>1380 | gag<br>Glu | ggc<br>Gly  | acg<br>Thr | 4150 |
|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|-------------|------------|------|
| cct<br>Pro | ccg<br>Pro<br>1385 | ccc<br>Pro | cca<br>Pro | ccg<br>Pro | ccc<br>Pro | tca<br>Ser<br>1390 | cgg<br>Arg | gac<br>Asp | ctg<br>Leu | acc<br>Thr | gag<br>Glu<br>1395 | gcc<br>Ala | tac<br>Tyr  | aag<br>Lys | 4195 |
| acg<br>Thr | cag<br>Gln<br>1400 | gcc<br>Ala | ctg<br>Leu | ggc<br>Gly | ccc<br>Pro | ctg<br>Leu<br>1405 | aag<br>Lys | ctg<br>Leu | aag<br>Lys | ccg<br>Pro | gcc<br>Ala<br>1410 | cat<br>His | gag<br>Glu  | ggc<br>Gly | 4240 |
| ctg<br>Leu | gtg<br>Val<br>1415 | gcc<br>Ala | acg<br>Thr | gtg<br>Val | aag<br>Lys | gag<br>Glu<br>1420 | gcg<br>Ala | Gly<br>ggc | cgc<br>Arg | tcc<br>Ser | atc<br>Ile<br>1425 | cat<br>His | gag<br>Glu  | atc<br>Ile | 4285 |
| ccg<br>Pro | cgc<br>Arg<br>1430 | gag<br>Glu | gag<br>Glu | ctg<br>Leu | cgg<br>Arg | cac<br>His<br>1435 | acg<br>Thr | ccc<br>Pro | gag<br>Glu | ctg<br>Leu | ccc<br>Pro<br>1440 | ctg<br>Leu | gcc<br>Ala  | ccg<br>Pro | 4330 |
| cgg<br>Arg | ccg<br>Pro<br>1445 | ctc<br>Leu | aag<br>Lys | gag<br>Glu | ggc<br>Gly | tcc<br>Ser<br>1450 | atc<br>Ile | acg<br>Thr | cag<br>Gln | ggc<br>Gly | acc<br>Thr<br>1455 | ccg<br>Pro | ctc<br>Leu  | aag<br>Lys | 4375 |
| tac<br>Tyr | gac<br>Asp<br>1460 | acc<br>Thr | ggc<br>Gly | gcg<br>Ala | tcc<br>Ser | acc<br>Thr<br>1465 | act<br>Thr | ggc<br>Gly | tcc<br>Ser | aaa<br>Lys | aag<br>Lys<br>1470 | Hls        | gac<br>Asp  | gta<br>Val | 4420 |
| cgc<br>Arg | tcc<br>Ser<br>1475 | ctc<br>Leu | atc<br>Ile | ggc<br>Gly | agc<br>Ser | ccc<br>Pro<br>1480 | ggc<br>Gly | cgg<br>Arg | acg<br>Thr | ttc<br>Phe | cca<br>Pro<br>1485 | Pro        | gtg<br>Val  | cac<br>His | 4465 |
| ccg<br>Pro | ctg<br>Leu<br>1490 | Asp        | gtg<br>Val | atg<br>Met | gcc<br>Ala | gac<br>Asp<br>1495 | gcc<br>Ala | cgg<br>Arg | gca<br>Ala | ctg<br>Leu | gaa<br>Glu<br>1500 | Arg        | gcc<br>Ala  | tgc<br>Cys | 4510 |
| tac<br>Tyr | gag<br>Glu<br>1505 | Glu        | agc<br>Ser | ctg<br>Leu | aag<br>Lys | agc<br>Ser<br>1510 | cgg<br>Arg | cca<br>Pro | Gly        | acc<br>Thr | gcc<br>Ala<br>1515 | Ser        | agc<br>Ser  | tcg<br>Ser | 4555 |
| GJÀ<br>aaa | ggc<br>Gly<br>1520 | Ser        | att<br>Ile | gcg<br>Ala | cgc<br>Arg | ggc<br>Gly<br>1525 | gcc<br>Ala | ccg<br>Pro | gtc<br>Val | att<br>Ile | gtg<br>Val<br>1530 | Pro        | gag<br>Glu  | ctg<br>Leu | 4600 |
| ggt<br>Gly | aag<br>Lys<br>1535 | Pro        | cgg<br>Arg | cag<br>Gln | agc<br>Ser | ccc<br>Pro<br>1540 | Leu        | acc<br>Thr | tat<br>Tyr | gag<br>Glu | gac<br>Asp<br>1545 | His        | G1 y<br>ggg | gca<br>Ala | 4645 |
| ccc<br>Pro | ttt<br>Phe<br>1550 | Ala        | ggc        | cac<br>His | ctc<br>Leu | cca<br>Pro<br>1555 | Arg        | ggt<br>Gly | tcg<br>Ser | ccc<br>Pro | gtg<br>Val<br>1560 | Thr        | atg<br>Met  | cgg<br>Arg | 4690 |
|            | ccc<br>Pro<br>1565 | Thr        | ccg        | cgc<br>Arg | ctg<br>Leu | cag<br>Gln<br>1570 | Glu        | ggc        | agc<br>Ser | ctt<br>Leu | tcg<br>Ser<br>1575 | Ser        | agc<br>Ser  | aag<br>Lys | 4735 |
| gca<br>Ala | tcc<br>Ser<br>1580 | Gln        | gac<br>Asp | cga<br>Arg | aag<br>Lys | ctg<br>Leu<br>1585 | Thr        | tcg<br>Ser | acg<br>Thr | cct<br>Pro | cgt<br>Arg<br>1590 | Glu        | ato         | gcc        | 4780 |
| aag<br>Lys | tcc<br>Ser<br>1595 | Pro        | cac<br>His | agc<br>Ser | acc<br>Thr | gtg<br>Val<br>1600 | Pro        | gag<br>Glu | cac<br>His | Cac        | cca<br>Pro<br>1605 | His        | ccc<br>Pro  | atc<br>Ile | 4825 |
| _          | ccc<br>Pro<br>1610 | Tyr        | gag<br>Glu | cac<br>His | ctg<br>Leu | ctt<br>Leu<br>1615 | Arg        | Gly<br>Gly | gtg<br>Val | agt<br>Ser | ggc<br>Gly<br>1620 | Val        | gac<br>Asp  | ctg<br>Leu | 4870 |
| tat<br>Tyr | cgc<br>Arg         | ago<br>Ser | cac<br>His | ato<br>Ile | ccc<br>Pro | ctg<br>Leu         | gcc<br>Ala | tto<br>Phe | gac<br>Asp | Pro        | acc<br>Thr         | tco<br>Ser | ata<br>Ile  | ccc<br>Pro | 4915 |

|                    | 1625                   |            |               |                |                | 1630                  |            |                |                |            | 1635                   |            |            |                |    |      |
|--------------------|------------------------|------------|---------------|----------------|----------------|-----------------------|------------|----------------|----------------|------------|------------------------|------------|------------|----------------|----|------|
|                    | ggc<br>Gly<br>1640     | atc<br>Ile | cct<br>Pro    | ctg<br>Leu     | gac<br>Asp     | gca<br>Ala<br>1645    | gcc<br>Ala | gct<br>Ala     | gcc<br>Ala     | tac<br>Tyr | tac<br>Tyr<br>1650     | ctg<br>Leu | ccc<br>Pro | ~ 5            | 49 | 60   |
| cac<br>His         | ctg<br>Leu<br>1655     | gcc<br>Ala | ccc<br>Pro    | aac<br>Asn     | ccc<br>Pro     | acc<br>Thr<br>1660    | tac<br>Tyr | ccg<br>Pro     | cac<br>His     | ctg<br>Leu | tac<br>Tyr<br>1665     | cca<br>Pro | ccc<br>Pro | tac<br>Tyr     | 50 | 05   |
| ctc<br>Leu         | atc<br>Ile<br>1670     | cgc<br>Arg | ggc<br>Gly    | tac<br>Tyr     | ccc<br>Pro     | gac<br>Asp<br>1675    | acg<br>Thr | gcg<br>Ala     | gcg<br>Ala     | ctg<br>Leu | gag<br>Glu<br>1680     | aac<br>Asn | cgg<br>Arg | cag<br>Gln     | 50 | 50   |
| acc<br>Thr         | atc<br>Ile<br>1685     | atc<br>Ile | aat<br>Asn    | gac<br>Asp     | tac<br>Tyr     | atc<br>Ile<br>1690    | acc<br>Thr | tcg<br>Ser     | cag<br>Gln     | cag<br>Gln | atg<br>Met<br>1695     | cac<br>His | cac<br>His | aac<br>Asn     | 50 | 95   |
|                    | gcc<br>Ala<br>1700     | acc<br>Thr | gcc<br>Ala    | atg<br>Met     | gcc<br>Ala     | cag<br>Gln<br>1705    | cga<br>Arg | gct<br>Ala     | gat<br>Asp     | atg<br>Met | ctg<br>Leu<br>1710     | agg<br>Arg | ggc<br>Gly | ctc<br>Leu     | 51 | .40  |
| tcg<br>Ser         | ccc<br>Pro<br>1715     | cgc<br>Arg | gag<br>Glu    | tcc<br>Ser     | tcg<br>Ser     | ctg<br>Leu<br>1720    | gca<br>Ala | ctc<br>Leu     | aac<br>Asn     | tac<br>Tyr | gct<br>Ala<br>1725     | gcg<br>Ala | ggt<br>Gly | ccc<br>Pro     | 51 | .85  |
| cga<br>Arg         | ggc<br>Gly<br>1730     | Ile        | atc<br>Ile    | gac<br>Asp     | ctg<br>Leu     | tcc<br>Ser<br>1735    | caa<br>Gln | gtg<br>Val     | cca<br>Pro     | cac<br>His | ctg<br>Leu<br>1740     | Pro        | gtg<br>Val | ctc<br>Leu     | 52 | 230  |
| gtg<br>Val         | ccc<br>Pro<br>1745     | Pro        | aca<br>Thr    | cca<br>Pro     | ggc            | acc<br>Thr<br>1750    | cca<br>Pro | gcc<br>Ala     | acc<br>Thr     | gcc<br>Ala | atg<br>Met<br>1755     | Asp        | cgc<br>Arg | ctt<br>Leu     | 52 | 275  |
|                    | tac<br>Tyr<br>1760     | Leu        | ccc<br>Pro    | acc<br>Thr     | gcg<br>Ala     | ccc<br>Pro<br>1765    | Gln        | ccc<br>Pro     | ttc<br>Phe     | agc<br>Ser | agc<br>Ser<br>1770     | Arg        | cac<br>His | agc<br>Ser     | 53 | 320  |
| agc<br>Ser         | tcc<br>Ser<br>1775     | Pro        | ctc<br>Leu    | tcc<br>Ser     | cca<br>Pro     | gga<br>Gly<br>1780    | Gly        | cca<br>Pro     | aca<br>Thr     | cac<br>His | ttg<br>Leu<br>1785     | Thr        | aaa<br>Lys | cca<br>Pro     | 53 | 365  |
|                    | acc<br>Thr<br>1790     | Thr        | tcc<br>Ser    | tcg<br>Ser     | tcc            | gag<br>Glu<br>1795    | Arg        | gag<br>Glu     | cga<br>Arg     | gac<br>Asp | cgg<br>Arg<br>1800     | Asp        | cga<br>Arg | gag<br>Glu     | 54 | 410  |
| cgg<br>Arg         | asp.                   | Ara        | r Asp         | Arq            | f GLu          | cgg<br>Arg<br>1810    | Giu        | . гу           | ser            | TTE        | ььеи                   | 1111       | tcc<br>Ser | acc            | 5. | 455  |
| ac <u>c</u><br>Thi | g acg<br>Thr<br>1820   | Val        | gag<br>Glu    | cac<br>His     | gca<br>Ala     | ccc<br>Pro<br>1825    | Ile        | tgg<br>Trp     | aga<br>Arg     | cct<br>Pro | ggt<br>Gly<br>1830     | THE        | gag<br>Glu | cag<br>Gln     | 5. | 500  |
| ago<br>Sei         | agc<br>Ser<br>1835     | Gly        | ago<br>Ser    | ago<br>Ser     | ggc<br>Gly     | agc<br>Ser<br>1840    | Ser        | ggc<br>Gly     | A GJĀ          | ggt<br>Gl  | ggg<br>Gly<br>1845     | GTA        | ago<br>Ser | agc<br>Ser     | 5  | 545  |
| ago<br>Se:         | c cgc<br>r Arg<br>1850 | Pro        | gco<br>Ala    | tco<br>Ser     | cac<br>His     | tcc<br>Ser<br>1855    | His        | gco<br>Ala     | c cac<br>a His | caç<br>Gli | g cac<br>n His<br>1860 | Ser        | Pro        | atc<br>Ile     | 5  | 590  |
| tc:<br>Se:         | c cct<br>r Pro<br>186  | Arg        | g aco         | c cag          | g gat<br>n Asp | gcc<br>Ala<br>1870    | Let        | c caq<br>ı Glı | g caç<br>n Glı | g aga      | a ccc<br>g Pro<br>187  | Sei        | gto<br>Vai | g ctt<br>L Leu | 5  | 635  |
| ca<br>Hi           | c aac<br>s Asn<br>188  | Th         | a ggo<br>r Gl | c ato<br>y Mei | g aaq<br>t Ly: | g ggt<br>s Gly<br>188 | Ile        | ate            | c acc          | c gc       | t gtg<br>a Val<br>189  | GII        | g cce      | c agc<br>ser   | 5  | 680  |
| aa                 | g ccc                  | ac         | g gt          | c ct           | g ag           | g tcc                 | aco        | e to           | c ac           |            | c tca<br>ge 28         | CC         | c gt       | t cgc          | 5  | 5725 |

| Lys        | Pro<br>1895        | Thr        | Val            | Leu        | Arg            | Ser<br>1900        | Thr        | Ser          | Thr          | Ser          | Ser<br>1905            | Pro        | Val        | Arg          |           |
|------------|--------------------|------------|----------------|------------|----------------|--------------------|------------|--------------|--------------|--------------|------------------------|------------|------------|--------------|-----------|
| cca<br>Pro | gct<br>Ala<br>1910 | gcc<br>Ala | aca<br>Thr     | ttc<br>Phe | Pro            | cct<br>Pro<br>1915 | gcc<br>Ala | acc<br>Thr   | cac<br>His   | tgc<br>Cys   | cca<br>Pro<br>1920     | ctg<br>Leu | ggc<br>Gly | ggc<br>Gly   | 5770      |
| acc<br>Thr | ctc<br>Leu<br>1925 | gat<br>Asp | Gly<br>ggg     | gtc<br>Val | Tyr            | cct<br>Pro<br>1930 | acc<br>Thr | ctc<br>Leu   | atg<br>Met   | gag<br>Glu   | ccc<br>Pro<br>1935     | gtc<br>Val | ttg<br>Leu | ctg<br>Leu   | 5815      |
| ccc<br>Pro | aag<br>Lys<br>1940 | gag<br>Glu | gcc<br>Ala     | ccc<br>Pro | cgg<br>Arg     | gtc<br>Val<br>1945 | gcc<br>Ala | cgg<br>Arg   | cca<br>Pro   | gag<br>Glu   | cgg<br>Arg<br>1950     | ccc<br>Pro | cga<br>Arg | gca<br>Ala   | 5860<br>· |
| gac<br>Asp | acc<br>Thr<br>1955 | ggc<br>Gly | cat<br>His     | gcc<br>Ala | ttc<br>Phe     | ctc<br>Leu<br>1960 | gcc<br>Ala | aag<br>Lys   | ccc<br>Pro   | cca<br>Pro   | gcc<br>Ala<br>1965     | cgc<br>Arg | tcc<br>Ser | Gly<br>ggg   | 5905      |
| ctg<br>Leu | gag<br>Glu<br>1970 | ccc<br>Pro | gcc<br>Ala     | tcc<br>Ser | tcc<br>Ser     | ccc<br>Pro<br>1975 | agc<br>Ser | aag<br>Lys   | ggc<br>Gly   | tcg<br>Ser   | gag<br>Glu<br>1980     | ccc<br>Pro | cgg<br>Arg | ccc<br>Pro   | 5950      |
| cta<br>Leu | gtg<br>Val<br>1985 | cct<br>Pro | cct<br>Pro     | gtc<br>Val | tct<br>Ser     | ggc<br>Gly<br>1990 | cac<br>His | gcc<br>Ala   | acc<br>Thr   | atc<br>Ile   | gcc<br>Ala<br>1995     | cgc<br>Arg | acc<br>Thr | cct<br>Pro   | 5995      |
| gcg<br>Ala | aag<br>Lys<br>2000 | Asn        | ctc<br>Leu     | gca<br>Ala | cct<br>Pro     | cac<br>His<br>2005 | cac<br>His | gcc<br>Ala   | agc<br>Ser   | ccg<br>Pro   | gac<br>Asp<br>2010     | ccg<br>Pro | ccg<br>Pro | gcg<br>Ala   | 6040      |
| cca<br>Pro | cct<br>Pro<br>2015 | Āla        | tcg<br>Ser     | gcc<br>Ala | tcg<br>Ser     | gac<br>Asp<br>2020 | ccg<br>Pro | cac<br>His   | cgg<br>Arg   | gaa<br>Glu   | aag<br>Lys<br>2025     | Thr        | caa<br>Gln | agt<br>Ser   | 6085      |
| aaa<br>Lys | ccc<br>Pro<br>2030 | Phe        | tcc<br>Ser     | atc<br>Ile | cag<br>Gln     | gaa<br>Glu<br>2035 | ctg<br>Leu | gaa<br>Glu   | ctc<br>Leu   | cgt<br>Arg   | tct<br>Ser<br>2040     | Leu        | ggt<br>Gly | tac<br>Tyr   | 6130      |
| cac<br>His | ggc<br>Gly<br>2045 | Ser        | agc<br>Ser     | tac<br>Tyr | agc<br>Ser     | ccc<br>Pro<br>2050 | gaa<br>Glu | GJ À<br>GG À | gtg<br>Val   | gag<br>Glu   | ccc<br>Pro<br>2055     | Val        | agc<br>Ser | cct<br>Pro   | 6175      |
| gtg<br>Val | agc<br>Ser<br>2060 | Ser        | ccc<br>Pro     | agt<br>Ser | ctg<br>Leu     | acc<br>Thr<br>2065 | His        | gac<br>Asp   | aag<br>Lys   | GJ A<br>GG A | ctc<br>Leu<br>2070     | Pro        | aag<br>Lys | cac<br>His   | 6220      |
| ctg<br>Leu | gaa<br>Glu<br>2075 | Glu        | ctc<br>Leu     | gac<br>Asp | aag<br>Lys     | agc<br>Ser<br>2080 | cac<br>His | ctg<br>Leu   | gag<br>Glu   | Gly          | gag<br>Glu<br>2085     | Leu        | cgg<br>Arg | ccc<br>Pro   | 6265      |
| aag<br>Lys | cag<br>Gln<br>2090 | Pro        | ggc<br>Gly     | ccc<br>Pro | gtg<br>Val     | aag<br>Lys<br>2095 | Leu        | ggc          | . Gla        | gag<br>Glu   | gcc<br>Ala<br>2100     | Ala        | cac<br>His | ctc<br>Leu   | 6310      |
| cca<br>Pro | cac<br>His<br>2105 | Let        | g cgg<br>L Arg | ccg<br>Pro | ctg<br>Leu     | cct<br>Pro<br>2110 | Glu        | ago<br>Ser   | cag<br>Gln   | Pro          | tcg<br>Ser<br>2115     | Ser        | ago<br>Ser | ccg<br>Pro   | 6355      |
| cto<br>Lev | ctc<br>Leu<br>2120 | Glr        | g acc<br>n Thr | gcc<br>Ala | cca<br>Pro     | ggg<br>Gly<br>2125 | Val        | aaa<br>Lys   | ggt<br>Gly   | cac<br>His   | cag<br>Gln<br>2130     | Arg        | gto<br>Val | gtc<br>Val   | 6400      |
| acc<br>Thr | ctg<br>Leu<br>213  | Ala        | c cac<br>a Glr | cac<br>His | atc<br>Ile     | agt<br>Ser<br>2140 | Glu        | gto<br>Val   | ato<br>I Ile | aca<br>Thi   | cag<br>Gln<br>2145     | ASE        | tac<br>Tyi | acc<br>Thr   | 6445      |
| cgg<br>Arg | cac<br>His<br>2150 | His        | c cca<br>s Pro | caç<br>Glr | g cag<br>n Gln | ctc<br>Leu<br>2155 | Ser        | gca<br>Ala   | a cco        | cto<br>Lev   | g ccc<br>1 Pro<br>2160 | Alé        | c ccc      | c ctc<br>Leu | 6490      |

| Tyr        | tcc<br>Ser<br>2165     | ttc<br>Phe | cct<br>Pro     | G1A<br>aaa     | gcc<br>Ala    | agc<br>Ser<br>2170     | tgc<br>Cys | ccc<br>Pro   | gtc<br>Val     | ctg<br>Leu |                                | ctc<br>Leu |              |                | 6535 |
|------------|------------------------|------------|----------------|----------------|---------------|------------------------|------------|--------------|----------------|------------|--------------------------------|------------|--------------|----------------|------|
| cca<br>Pro |                        | agt<br>Ser | gac<br>Asp     | ctc<br>Leu     | tac<br>Tyr    | ctc<br>Leu<br>2185     | ccg<br>Pro | ccc<br>Pro   | ccg<br>Pro     | gac<br>Asp | cat<br>His<br>2190             | ggt<br>Gly | gcc<br>Ala   | ccg<br>Pro     | 6580 |
| gcc<br>Ala | cgt<br>Arg<br>2195     | ggc<br>Gly | tcc<br>Ser     | ccc<br>Pro     | cac<br>His    | agc<br>Ser<br>2200     | gaa<br>Glu | GJÅ<br>āāā   | ggc<br>Gly     | aag<br>Lys | agg<br>Arg<br>2205             | tct<br>Ser | cca<br>Pro   | gag<br>Glu     | 6625 |
|            | aac<br>Asn<br>2210     | aag<br>Lys | acg<br>Thr     | tcg<br>Ser     | gtc<br>Val    | ttg<br>Leu<br>2215     | ggt<br>Gly | ggt<br>Gly   | ggt<br>Gly     | gag<br>Glu | gac<br>Asp<br>2220             | ggt<br>Gly | att<br>Ile   | gaa<br>Glu     | 6670 |
|            | gtg<br>Val<br>2225     | tcc<br>Ser | cca<br>Pro     | ccg<br>Pro     | gag<br>Glu    | ggc<br>Gly<br>2230     | atg<br>Met | acg<br>Thr   | gag<br>Glu     | cca<br>Pro | ggg<br>Gly<br>2235             | cac<br>His | tcc<br>Ser   | cgg<br>Arg     | 6715 |
| agt<br>Ser | gct<br>Ala<br>2240     | gtg<br>Val | tac<br>Tyr     | ccg<br>Pro     | ctg<br>Leu    | ctg<br>Leu<br>2245     | tac<br>Tyr | cgg<br>Arg   | gat<br>Asp     | Gly<br>ggg | gaa<br>Glu<br>2250             | cag<br>Gln | acg<br>Thr   | gag<br>Glu     | 6760 |
| ccc<br>Pro | agc<br>Ser<br>2255     | agg<br>Arg | atg<br>Met     | ggc            | tcc<br>Ser    | aag<br>Lys<br>2260     | tct<br>Ser | cca<br>Pro   | ggc<br>Gly     | aac<br>Asn | acc<br>Thr<br>2265             | ser        | cag<br>Gln   | ccg<br>Pro     | 6805 |
| cca<br>Pro | gcc<br>Ala<br>2270     | Phe        | ttc<br>Phe     | agc<br>Ser     | aag<br>Lys    | ctg<br>Leu<br>2275     | acc<br>Thr | gag<br>Glu   | agc<br>Ser     | aac<br>Asn | tcc<br>Ser<br>2280             | Ата        | atg<br>Met   | gtc<br>Val     | 6850 |
| aag<br>Lys | tcc<br>Ser<br>2285     | Lys        | aag<br>Lys     | caa<br>Gln     | gag<br>Glu    | atc<br>Ile<br>2290     | aac<br>Asn | aag<br>Lys   | aag<br>Lys     | ctg<br>Leu | aac<br>Asn<br>2295             | Thr        | cac<br>His   | aac<br>Asn     | 6895 |
| cgg<br>Arg | aat<br>Asn<br>2300     | Glu        | cct<br>Pro     | gaa<br>Glu     | tac<br>Tyr    | aat<br>Asn<br>2305     | atc<br>Ile | agc<br>Ser   | cag<br>Gln     | cct<br>Pro | ggg<br>Gly<br>2310             | Thr        | gag<br>Glu   | atc<br>Ile     | 6940 |
| ttc<br>Phe | aat<br>Asn<br>2315     | Met        | ccc<br>Pro     | gcc<br>Ala     | atc<br>Ile    | acc<br>Thr<br>2320     | Gly        | aca<br>Thr   | Gly            | ctt<br>Leu | atg<br>Met<br>2325             | Thr        | tat<br>Tyr   | aga<br>Arg     | 6985 |
|            | cag<br>Gln<br>2330     | Ala        | gtg<br>Val     | cag<br>Gln     | gaa<br>Glu    | cat<br>His<br>2335     | Ala        | ago<br>Ser   | acc<br>Thr     | aac<br>Asn | atg<br>Met<br>2340             | GTA        | ctg<br>Leu   | gag<br>Glu     | 7030 |
| gcc<br>Ala | ata<br>Ile<br>2345     | Ile        | aga<br>Arg     | aag<br>Lys     | gca<br>Ala    | ctc<br>Leu<br>2350     | Met        | ggt<br>Gly   | aaa<br>Lys     | tat<br>Tyr | gac<br>Asp<br>2355             | GIII       | tgg<br>Trp   | gaa<br>Glu     | 7075 |
| gag<br>Glu | tcc<br>Ser<br>2360     | Pro        | Pro            | Leu            | Ser           | gcc<br>Ala<br>2365     | Asn        | ı Ala        | a Phe          | . Asr      | 2370                           | Leu        | l ASI        | ı Ala          | 7120 |
| Sér        | 2375                   | Ser        | Leu            | ı Pro          | Ala           | gct<br>Ala<br>2380     | Met        | : Pro        | ) Ile          | e Thi      | 2385                           | Ala<br>5   | a Asp        | э стх          | 7165 |
| cgg<br>Arg | g agt<br>g Ser<br>2390 | Asp        | cac<br>His     | aca<br>Thi     | t cto         | acc<br>Thr<br>2395     | Sea        | g cca        | a ggt<br>o Gly | ggo<br>Gl  | ggc<br>y Gly<br>2400           | GT2        | y Ly:        | g gcc<br>s Ala | 7210 |
| aaq<br>Lys | g gtc<br>Val<br>240    | Se:        | c Gly          | y Arg          | y Pro         | c agc<br>Ser<br>2410   | Se:        | r Ar         | g Lys          | s Ala      | a Lys<br>241                   | Se:<br>5   | r Pro        | о Ата          |      |
| Pro        | g ggc<br>Gly<br>242    | Let        | g gca<br>ı Ala | a tci<br>a Se: | t ggg<br>r Gl | g gac<br>y Asp<br>242! | Ar         | g cc<br>g Pr | a cco          | o Se       | t gtc<br>r Val<br>243<br>re 30 | Se:        | c tc<br>r Se | a gtg<br>r Val | 7300 |

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|     | tcg<br>Ser<br>2435 | gag<br>Glu | gga<br>Gly | gac<br>Asp | tgc<br>Cys | aac<br>Asn<br>2440 | cgc<br>Arg | cgg<br>Arg | acg<br>Thr | ccg<br>Pro | ctc<br>Leu<br>2445 | Thr   | aac<br>Asn |            | 7345 |
|-----|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|-------|------------|------------|------|
|     | tgg<br>Trp<br>2450 | gag<br>Glu | gac<br>Asp | agg<br>Arg | ccc<br>Pro | tcg<br>Ser<br>2455 | tcc<br>Ser | gca<br>Ala | ggt<br>Gly | tcc<br>Ser | acg<br>Thr<br>2460 |       | ttc<br>Phe |            | 7390 |
|     | aac<br>Asn<br>2465 |            |            | atc<br>Ile |            | cgg<br>Arg<br>2470 | ctg<br>Leu | cag<br>Gln | gcg<br>Ala | ggt<br>Gly | gtc<br>Val<br>2475 |       | gct<br>Ala |            | 7435 |
|     | ccc<br>Pro<br>2480 | cca<br>Pro | ccg<br>Pro | ggc<br>Gly | ctc<br>Leu | ccc<br>Pro<br>2485 | gcg<br>Ala | ggc        | agc<br>Ser | GJÀ<br>ààà | ccc<br>Pro<br>2490 |       | gct<br>Ala | Gly<br>ggc | 7480 |
| -   | cac<br>His<br>2495 | cac<br>His | gcc<br>Ala | tgg<br>Trp | gac<br>Asp | gag<br>Glu<br>2500 | gag<br>Glu | ccc<br>Pro | aag<br>Lys | cca<br>Pro | ctg<br>Leu<br>2505 | Leu   | _          | tcg<br>Ser | 7525 |
| _   | tac<br>Tyr<br>2510 | Glu        |            |            |            | gac<br>Asp<br>2515 |            | gag<br>Glu |            | ctc        | agaac              | ag g  | gcgg       | aaaaa      | 7575 |
| ggc | gggcg              | gt g       | tcag       | gtcc       | c ag       | cgagc              | cac        | agga       | acgg       | cc c       | tgcag              | gagc  | ggg        | gcggctg    | 7635 |
| ccg | actcc              | cc c       | aacc       | aagg       | a ag       | gagcc              | cct        | gagt       | ccgc       | ct g       | cgcct              | ccat  | cca        | tctgtcc    | 7695 |
| gtc | cagag              | cc g       | gcat       | cctt       | g cc       | tgtct              | aaa        | gcct       | taac       | ta a       | gacto              | ccgc  | ccc        | gggctgg    | 7755 |
| ccc | tgtgc              | ag a       | cctt       | actc       | a gg       | ggatg              | ttt        | acct       | ggtg       | ct c       | gggaa              | ggga  | ggg        | gaagggg    | 7815 |
| ccg | gggag              | gg g       | gcac       | ggca       | g gc       | gtgtg              | gca        | gcca       | caca       | ca g       | gcggc              | cagg  | gcg        | gccaggg    | 7875 |
| acc | caaag              | ca g       | gatg       | acca       | c gc       | acctc              | cac        | gcca       | .ctgc      | ct c       | ccccg              | aatg  | cat        | ttggaac    | 7935 |
| caa | agtct              | aa a       | .ctga      | .gctc      | g ca       | gcccc              | cgc        | gccc       | tccc       | tc c       | gcctc              | ccat  | ccc        | gcttagc    | 7995 |
| gct | ctgga              | .ca g      | atgg       | acgo       | a gg       | ccctg              | tcc        | agco       | ccca       | gt g       | cgctc              | gttc  | cgg        | tccccac    | 8055 |
|     |                    |            |            |            |            |                    |            |            |            |            |                    |       |            | acaaaag    | 8115 |
| ggc | caggt              | .gc g      | rgcct      | gggg       | g ga       | .acgga             | tgc        | tccg       | agga       | ct g       | gacto              | ıttt  | ttt        | cacacat    | 8175 |
|     |                    |            |            |            |            |                    |            |            |            |            |                    |       |            | agggtat    | 8235 |
| att | tttga              | ta c       | ctto       | aatg       | ra at      | taatt              | cag        | atgt       | ttta       | cg c       | aagga              | agga  | ctt        | acccagt    | 8295 |
| att | actgo              | tg c       | tgtg       | cttt       | t ga       | tctct              | gct        | taco       | gttc       | aa g       | gaggc              | gtgtg | caç        | gccgaca    | 8355 |
|     |                    |            |            |            |            |                    |            |            |            |            |                    |       |            | cccgctg    | 8415 |
|     |                    |            |            |            |            |                    |            |            |            |            |                    |       |            | ggccgcca   | 8475 |
|     |                    |            |            |            |            |                    |            |            |            |            |                    |       |            | agcgaatt   | 8535 |
|     | ctcca              |            |            |            |            |                    |            |            |            |            |                    |       |            |            | 8561 |

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- Thr His Thr Asp Val Gly Leu Leu Glu Tyr Gln His His Ser Arg Asp 35 40
- Tyr Ala Ser His Leu Ser Pro Gly Ser Ile Ile Gln Pro Gln Arg Arg 50 55 60
- Arg Pro Ser Leu Leu Ser Glu Phe Gln Pro Gly Asn Glu Arg Ser Gln 65 70 75 80
- Glu Leu His Leu Arg Pro Glu Ser His Ser Tyr Leu Pro Glu Leu Gly 85 90 95
- Lys Ser Glu Met Glu Phe Ile Glu Ser Lys Arg Pro Arg Leu Glu Leu 100 105 110
- Leu Pro Asp Pro Leu Leu Arg Pro Ser Pro Leu Leu Ala Thr Gly Gln 115 120 125
- Pro Ala Gly Ser Glu Asp Leu Thr Lys Asp Arg Ser Leu Thr Gly Lys 130 135 140
- Leu Glu Pro Val Ser Pro Pro Ser Pro Pro His Thr Asp Pro Glu Leu 145 150 155 160
- Glu Leu Val Pro Pro Arg Leu Ser Lys Glu Glu Leu Ile Gln Asn Met 165 170 175
- Asp Arg Val Asp Arg Glu Ile Thr Met Val Glu Gln Gln Ile Ser Lys 180 185 190
- Leu Lys Lys Gln Gln Gln Leu Glu Glu Glu Ala Ala Lys Pro Pro 195 200 205
- Glu Pro Glu Lys Pro Val Ser Pro Pro Pro Ile Glu Ser Lys His Arg 210 215 220
- Ser Leu Val Gln Ile Ile Tyr Asp Glu Asn Arg Lys Lys Ala Glu Ala 225 230 235 240
- Ala His Arg Ile Leu Glu Gly Leu Gly Pro Gln Val Glu Leu Pro Leu 245 250 250
- Tyr Asn Gln Pro Ser Asp Thr Arg Gln Tyr His Glu Asn Ile Lys Ile 260 265 270
- Asn Gln Ala Met Arg Lys Lys Leu Ile Leu Tyr Phe Lys Arg Arg Asn 275 280 285
- His Ala Arg Lys Gln Trp Lys Gln Lys Phe Cys Gln Arg Tyr Asp Gln 290 295 300

- Leu Met Glu Ala Leu Glu Lys Lys Val Glu Arg Ile Glu Asn Asn Pro 305 310 315
- Arg Arg Arg Ala Lys Glu Ser Lys Val Arg Glu Tyr Tyr Glu Lys Gln 325 330 335
- Phe Pro Glu Ile Arg Lys Gln Arg Glu Leu Gln Glu Arg Met Gln Ser 340 345
- Arg Val Gly Gln Arg Gly Ser Gly Leu Ser Met Ser Ala Ala Arg Ser 355 360 365
- Glu His Glu Val Ser Glu Ile Ile Asp Gly Leu Ser Glu Gln Glu Asn 370 375 380
- Leu Glu Lys Gln Met Arg Gln Leu Ala Val Ile Pro Pro Met Leu Tyr 385 390 395 400
- Asp Ala Asp Gln Gln Arg Ile Lys Phe Ile Asn Met Asn Gly Leu Met 405 410 415
- Ala Asp Pro Met Lys Val Tyr Lys Asp Arg Gln Val Met Asn Met Trp 420 425 430
- Ser Glu Gln Glu Lys Glu Thr Phe Arg Glu Lys Phe Met Gln His Pro 435 440 445
- Lys Asn Phe Gly Leu Ile Ala Ser Phe Leu Glu Arg Lys Thr Val Ala 450 455 460
- Glu Cys Val Leu Tyr Tyr Leu Thr Lys Lys Asn Glu Asn Tyr Lys 465 470 475 480
- Ser Leu Val Arg Arg Ser Tyr Arg Arg Gly Lys Ser Gln Gln Gln 485 490 495
- Pro Arg Ser Ser Gln Glu Glu Lys Asp Glu Lys Glu Lys Glu Lys Glu 515 520 525
- Ala Glu Lys Glu Glu Glu Lys Pro Glu Val Glu Asn Asp Lys Glu Asp 530 540
- Leu Leu Lys Glu Lys Thr Asp Asp Thr Ser Gly Glu Asp Asn Asp Glu 545 550 555 560
- Lys Glu Ala Val Ala Ser Lys Gly Arg Lys Thr Ala Asn Ser Gln Gly 565 570 575
- Arg Arg Lys Gly Arg Ile Thr Arg Ser Met Ala Asn Glu Ala Asn Ser 580 585

Glu Glu Ala Ile Thr Pro Gln Gln Ser Ala Glu Leu Ala Ser Met Glu 595 600 605

Leu Asn Glu Ser Ser Arg Trp Thr Glu Glu Glu Met Glu Thr Ala Lys 610 615 620

Lys Gly Leu Leu Glu His Gly Arg Asn Trp Ser Ala Ile Ala Arg Met 625 630 635

Val Gly Ser Lys Thr Val Ser Gln Cys Lys Asn Phe Tyr Phe Asn Tyr 645 650 655

Lys Lys Arg Gln Asn Leu Asp Glu Ile Leu Gln Gln His Lys Leu Lys 660 665 670

Met Glu Lys Glu Arg Asn Ala Arg Arg Lys Lys Lys Ala Pro Ala 675 680 685

Ala Ala Ser Glu Glu Ala Ala Phe Pro Pro Val Val Glu Asp Glu Glu 690 695 700

Met Glu Ala Ser Gly Val Ser Gly Asn Glu Glu Glu Met Val Glu 705 710 715 720

Ala Glu Ala Leu His Ala Ser Gly Asn Glu Val Pro Arg Gly Glu Cys 725 730 735

Ser Gly Pro Ala Thr Val Asn Asn Ser Ser Asp Thr Glu Ser Ile Pro 740 745 750

Ser Pro His Thr Glu Ala Ala Lys Asp Thr Gly Gln Asn Gly Pro Lys 755 760 765

Pro Pro Ala Thr Leu Gly Ala Asp Gly Pro Pro Pro Gly Pro Pro Thr 770 780

Pro Pro Arg Arg Thr Ser Arg Ala Pro Ile Glu Pro Thr Pro Ala Ser 785 790 795 800

Glu Ala Thr Gly Ala Pro Thr Pro Pro Pro Ala Pro Pro Ser Pro Ser 805 ' 810 815

Ala Pro Pro Pro Val Val Pro Lys Glu Glu Lys Glu Glu Glu Thr Ala 820 825 830

Ala Ala Pro Pro Val Glu Glu Gly Glu Glu Gln Lys Pro Pro Ala Ala 835 840 845

Glu Glu Leu Ala Val Asp Thr Gly Lys Ala Glu Glu Pro Val Lys Ser 850 855 860

Glu Cys Thr Glu Glu Ala Glu Glu Gly Pro Ala Lys Gly Lys Asp Ala Page 34 865 870 875 880

Glu Ala Ala Glu Ala Thr Ala Glu Gly Ala Leu Lys Ala Glu Lys Lys 885 890 895

Glu Gly Gly Ser Gly Arg Ala Thr Thr Ala Lys Ser Ser Gly Ala Pro 900 905 910

Gln Asp Ser Asp Ser Ser Ala Thr Cys Ser Ala Asp Glu Val Asp Glu 915 920 925

Ala Glu Gly Gly Asp Lys Asn Arg Leu Leu Ser Pro Arg Pro Ser Leu 930 935 940

Leu Thr Pro Thr Gly Asp Pro Arg Ala Asn Ala Ser Pro Gln Lys Pro 945 950 955

Leu Asp Leu Lys Gln Leu Lys Gln Arg Ala Ala Ala Ile Pro Pro Ile 965 970 975

Gln Val Thr Lys Val His Glu Pro Pro Arg Glu Asp Ala Ala Pro Thr 980 985 990

Lys Pro Ala Pro Pro Ala Pro Pro Pro Pro Gln Asn Leu Gln Pro Glu 995 1000 1005

Ser Asp Ala Pro Gln Gln Pro Gly Ser Ser Pro Arg Gly Lys Ser 1010 1015 1020

Arg Ser Pro Ala Pro Pro Ala Asp Lys Glu Ala Phe Ala Ala Glu 1025 1030 1035

Ala Gln Lys Leu Pro Gly Asp Pro Pro Cys Trp Thr Ser Gly Leu 1040 1045 1050

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Met Ser Val Gln Leu His Val Pro Tyr Ser Glu His Ala Lys Ala 1130 1135 1140

- Pro Val Gly Pro Val Thr Met Gly Leu Pro Leu Pro Met Asp Pro 1145 1150 1155
- Lys Lys Leu Ala Pro Phe Ser Gly Val Lys Gln Glu Gln Leu Ser 1160 1165 1170
- Pro Arg Gly Gln Ala Gly Pro Pro Glu Ser Leu Gly Val Pro Thr 1175 1180 1185
- Ala Gln Glu Ala Ser Val Leu Arg Gly Thr Ala Leu Gly Ser Val 1190 1195 1200
- Pro Gly Gly Ser Ile Thr Lys Gly Ile Pro Ser Thr Arg Val Pro 1205 1210 1215
- Ser Asp Ser Ala Ile Thr Tyr Arg Gly Ser Ile Thr His Gly Thr 1220 1225 1230
- Pro Ala Asp Val Leu Tyr Lys Gly Thr Ile Thr Arg Ile Ile Gly 1235 1240 1245
- Glu Asp Ser Pro Ser Arg Leu Asp Arg Gly Arg Glu Asp Ser Leu 1250 1255 1260
- Pro Lys Gly His Val Ile Tyr Glu Gly Lys Lys Gly His Val Leu 1265 1270 1275
- Ser Tyr Glu Gly Gly Met Ser Val Thr Gln Cys Ser Lys Glu Asp 1280 1285 1290
- Gly Arg Ser Ser Ser Gly Pro Pro His Glu Thr Ala Ala Pro Lys 1295 1300 1305
- Arg Thr Tyr Asp Met Met Glu Gly Arg Val Gly Arg Ala Ile Ser 1310 1320
- Ser Ala Ser Ile Glu Gly Leu Met Gly Arg Ala Ile Pro Pro Glu 1325 1330 1335
- Arg His Ser Pro His His Leu Lys Glu Gln His His Ile Arg Gly 1340 1345 1350
- Ser Ile Thr Gln Gly Ile Pro Arg Ser Tyr Val Glu Ala Gln Glu 1355 1360 1365
- Asp Tyr Leu Arg Arg Glu Ala Lys Leu Leu Lys Arg Glu Gly Thr 1370 1380
- Pro Pro Pro Pro Pro Pro Ser Arg Asp Leu Thr Glu Ala Tyr Lys 1385 1390 1395
- Thr Gln Ala Leu Gly Pro Leu Lys Leu Lys Pro Ala His Glu Gly 1400 1405 1410

| Leu | Val  | Ala | Thr | Val | Lys | Glu  | Ala | Gly | Arg | Ser | Ile  | His | Glu | Ile |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
|     | 1415 |     |     |     | -   | 1420 |     | _   |     |     | 1425 |     |     |     |

- Pro Arg Glu Glu Leu Arg His Thr Pro Glu Leu Pro Leu Ala Pro 1430 1435
- Arg Pro Leu Lys Glu Gly Ser Ile Thr Gln Gly Thr Pro Leu Lys
- Tyr Asp Thr Gly Ala Ser Thr Thr Gly Ser Lys Lys His Asp Val 1460 1465 1470
- Arg Ser Leu Ile Gly Ser Pro Gly Arg Thr Phe Pro Pro Val His 1475 1480 1485
- Pro Leu Asp Val Met Ala Asp Ala Arg Ala Leu Glu Arg Ala Cys 1490 1495 . 1500
- Tyr Glu Glu Ser Leu Lys Ser Arg Pro Gly Thr Ala Ser Ser Ser 1505 1510 1515
- Gly Gly Ser Ile Ala Arg Gly Ala Pro Val Ile Val Pro Glu Leu 1520 1530
- Gly Lys Pro Arg Gln Ser Pro Leu Thr Tyr Glu Asp His Gly Ala 1535 1540 1545
- Pro Phe Ala Gly His Leu Pro Arg Gly Ser Pro Val Thr Met Arg 1550 1560
- Glu Pro Thr Pro Arg Leu Gln Glu Gly Ser Leu Ser Ser Lys 1565 1570 1575
- Ala Ser Gln Asp Arg Lys Leu Thr Ser Thr Pro Arg Glu Ile Ala 1580 1585 1590
- Lys Ser Pro His Ser Thr Val Pro Glu His His Pro His Pro Ile 1595 1600 1605
- Ser Pro Tyr Glu His Leu Leu Arg Gly Val Ser Gly Val Asp Leu 1610 1615 1620
- Tyr Arg Ser His Ile Pro Leu Ala Phe Asp Pro Thr Ser Ile Pro 1625 1630 1635
- Arg Gly Ile Pro Leu Asp Ala Ala Ala Ala Tyr Tyr Leu Pro Arg 1640 1645 1650
- His Leu Ala Pro Asn Pro Thr Tyr Pro His Leu Tyr Pro Pro Tyr 1655 1660 1665
- Leu Ile Arg Gly Tyr Pro Asp Thr Ala Ala Leu Glu Asn Arg Gln 1670 1675 1680

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| Thr | Ile<br>1685 | Ile | Asn | Asp | Tyr | Ile<br>1690 | Thr | Ser | Gln | Gln | Met<br>1695 | His | His | Asn |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|
| Thr | Ala<br>1700 | Thr | Ala | Met | Ala | Gln<br>1705 |     | Ala | Asp | Met | Leu<br>1710 | Arg | Gly | Leu |
| Ser | Pro<br>1715 | Arg | Glu | Ser | Ser | Leu<br>1720 | Ala | Leu | Asn | Tyr | Ala<br>1725 | Ala | Gly | Pro |
| Arg | Gly<br>1730 | Ile | Ile | Asp |     | Ser<br>1735 | Gln | Val | Pro | His | Leu<br>1740 | Pro | Val | Leu |
| Val | Pro<br>1745 | Pro | Thr | Pro | Gly | Thr<br>1750 | Pro | Ala | Thr | Ala | Met<br>1755 | Asp | Arg | Leu |
| Ala | Tyr<br>1760 |     | Pro | Thr | Ala | Pro<br>1765 | Gln | Pro | Phe | Ser | Ser<br>1770 |     | His | Ser |
| Ser | Ser<br>1775 | Pro | Leu | Ser | Pro | Gly<br>1780 | Gly | Pro | Thr | His | Leu<br>1785 | Thr | Lys | Pro |
| Thr | Thr<br>1790 |     | Ser | Ser | Ser | Glu<br>1795 | Arg | Glu | Arg | Asp | Arg<br>1800 | Asp | Arg | Glu |
| Arg | Asp<br>1805 |     | Asp | Arg | Glu | Arg<br>1810 |     | Lys | Ser | Ile | Leu<br>1815 | Thr | Ser | Thr |
| Thr | Thr<br>1820 |     | Glu | His | Ala | Pro<br>1825 | Ile | Trp | Arg | Pro | Gly<br>1830 | Thr | Glu | Gln |
| Şer | Ser<br>1835 |     | Ser | Ser | Gly | Ser<br>1840 | Ser | Gly | Gly | Gly | Gly<br>1845 | Gly | Ser | Ser |
| Ser | Arg<br>1850 |     | Ala | Ser | His | Ser<br>1855 | His | Ala | His | Gln | His<br>1860 | Ser | Pro | Ile |
| Ser | Pro<br>1865 |     | Thr | Gln | Asp | Ala<br>1870 | Leu | Gln | Gln | Arg | Pro<br>1875 | Ser | Val | Leu |
| His | Asn<br>1880 |     | Gly | Met | Lys | Gly<br>1885 | Ile | Ile | Thr | Ala | Val<br>1890 | Glu | Pro | Ser |

Pro Ala Ala Thr Phe Pro Pro Ala Thr His Cys Pro 1920 Leu Gly Gly
Thr Leu Asp Gly Val Tyr Pro 1930 Thr Leu Met Glu Pro 1935 Val Leu Leu
Pro Lys Glu Ala Pro Arg Val Ala Arg Pro Glu Arg Pro Arg Ala
N Page 38

Lys Pro Thr Val Leu Arg Ser Thr Ser Thr Ser Ser Pro Val Arg 1895 1900 1905 1940

1945 1950

| Asp | Thr<br>1955 |     | His  | Ala | Phe | Leu<br>1960 |     | Lys | Pro | Pro | Ala<br>1965 |     | Ser | Gly |
|-----|-------------|-----|------|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|
| Leu | Glu<br>1970 |     | Ala  | Ser | Ser | Pro<br>1975 |     | Lys | Gly | Ser | Glu<br>1980 |     | Arg | Pro |
| Leu | Val<br>1985 | Pro | Pro  | Val | Ser | Gly<br>1990 | His | Ala | Thr | Ile | Ala<br>1995 | Arg | Thr | Pro |
| Ala | Lys<br>2000 |     | Leu  | Ala |     | His<br>2005 |     | Ala | Ser |     | Asp<br>2010 | Pro | Pro | Ala |
| Pro | Pro<br>2015 |     | Ser  | Ala |     | Asp<br>2020 |     | His | Arg |     | Lys<br>2025 |     | Gln | Ser |
| Lys | Pro<br>2030 |     | Ser  | Ile |     | Glu<br>2035 |     | Glu | Leu |     | Ser<br>2040 |     | Gly | Tyr |
| His | Gly<br>2045 |     | Ser  | Tyr |     | Pro<br>2050 |     | Gly | Val |     | Pro<br>2055 |     | Ser | Pro |
| Val | Ser<br>2060 |     | Pro  | Ser |     | Thr<br>2065 |     | Asp | Lys |     | Leu<br>2070 |     | Lys | His |
| Leu | Glu<br>2075 |     | Leu  | Asp |     | Ser<br>2080 |     | Leu | Glu | Gly | Glu<br>2085 | Leu | Arg | Pro |
| Lys | Gln<br>2090 |     | Gly. | Pro |     | Lys<br>2095 |     | Gly | Gly | Glu | Ala<br>2100 | Ala | His | Leu |
| Pro | His<br>2105 |     | Arg  | Pro |     | Pro<br>2110 |     | Ser | Gln |     | Ser<br>2115 |     | Ser | Pro |
| Leu | Leu<br>2120 |     | Thr  | Ala |     | Gly<br>2125 |     | Lys | Gly |     | Gln<br>2130 |     | Val | Val |
| Thr | Leu<br>2135 |     | Gln  | His | Ile | Ser<br>2140 | Glu | Val | Ile | Thr | Gln<br>2145 | Asp | Tyr | Thr |
| Arg | His<br>2150 |     | Pro  | Gln | Gln | Leu<br>2155 |     | Ala | Pro | Leu | Pro<br>2160 |     | Pro | Leu |
| Tyr | Ser<br>2165 |     | Pro  | Gly | Ala | Ser<br>2170 |     | Pro | Val | Leu | Asp<br>2175 | Leu | Arg | Arg |
| Pro | Pro<br>2180 |     | Asp  | Leu | Tyr | Leu<br>2185 |     | Pro | Pro | Asp | His<br>2190 | Gly | Ala | Pro |
| Ala | Arg<br>2195 |     | Ser  | Pro | His | Ser<br>2200 |     | Gly | Gly | Lys | Arg<br>2205 |     | Pro | Glu |

| Pro | Asn  | Lys | Thr | Ser | Val | Leu  | Gly | Gly | Gly | Glu | Asp  | Gly | Ile | Glu |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
|     | 2210 |     |     |     |     | 2215 |     |     |     |     | 2220 |     |     |     |

- Pro Val Ser Pro Pro Glu Gly Met Thr Glu Pro Gly His Ser Arg 2225 2230 2235
- Ser Ala Val Tyr Pro Leu Leu Tyr Arg Asp Gly Glu Gln Thr Glu 2240 2250
- Pro Ser Arg Met Gly Ser Lys Ser Pro Gly Asn Thr Ser Gln Pro 2255 2260 2265
- Pro Ala Phe Phe Ser Lys Leu Thr Glu Ser Asn Ser Ala Met Val 2270 2275 2280
- Lys Ser Lys Lys Gln Glu Ile Asn Lys Lys Leu Asn Thr His Asn 2285 2290 2295
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- Phe Asn Met Pro Ala Ile Thr Gly Thr Gly Leu Met Thr Tyr Arg 2315 2320 2325
- Ser Gln Ala Val Gln Glu His Ala Ser Thr Asn Met Gly Leu Glu 2330 2340
- Ala Ile Ile Arg Lys Ala Leu Met Gly Lys Tyr Asp Gln Trp Glu 2345 2350 2355
- Glu Ser Pro Pro Leu Ser Ala Asn Ala Phe Asn Pro Leu Asn Ala 2360 2365 2370
- Ser Ala Ser Leu Pro Ala Ala Met Pro Ile Thr Ala Ala Asp Gly 2375 2380 2385
- Arg Ser Asp His Thr Leu Thr Ser Pro Gly Gly Gly Gly Lys Ala 2390 2400
- Lys Val Ser Gly Arg Pro Ser Ser Arg Lys Ala Lys Ser Pro Ala 2405 2410 2415
- Pro Gly Leu Ala Ser Gly Asp Arg Pro Pro Ser Val Ser Ser Val 2420 2425 2430
- His Ser Glu Gly Asp Cys Asn Arg Arg Thr Pro Leu Thr Asn Arg 2435 2440 2445
- Val Trp Glu Asp Arg Pro Ser Ser Ala Gly Ser Thr Pro Phe Pro 2450 2455 2460
- Tyr Asn Pro Leu Ile Met Arg Leu Gln Ala Gly Val Met Ala Ser 2465 2470 2475

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|            |             |              | 1            | Page 82      |              |       |

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| aaagccatcg cattgcacag ccacagggcc cggccct    |                                  |
|   | Page 94                          |

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|            |             |              | 1                | Page 116    |             |           |

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| Lugo 120   |

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| tagaggagtg | cgcatggatg   | ggcacttcct   | ggccaggaca   | gggaagaggt   | ggagtgcagc   | 185040   |
| ctggagtgtg | tgtccggcag   | ggacgtgacc   | gctcctgggc   | cccacaatgg   | acagacatgt   | 185100   |
| gctccacagg | tcacccactg   | cccctgggcc   | tccatgacac   | tgcccggccc   | gtcctgccgc   | 185160   |
| gcccacccac | catctccaac   | ccgcctcccc   | tcatctcctc   | tgccaagcac   | cccagcgtcc   | 185220   |
| tcgagaggca | aataggtgcc   | atctcccaag   | tgagtggtag   | cccttccttt   | cttgggggct   | 185280   |
| tagtcttctt | atctgtaaag   | tgggggcaat   | gggaccaatg   | aagtctgagt   | gggggccagg   | 185340   |
| ctctcggggg | cctgggtcat   | ctccactcag   | gcatctgggg   | tctgagctgg   | ctgggtcctg   | 185400   |
| ccccaggcap | tcagggcctc   | gtccctgggg   | ggtcactctg   | tattgcagtc   | aagggcatgg   | 185460   |
| ctcaggaaco | : aggctgtgtg | gcctcaggca   | agttacttaa   | cctcctgttt   | ccccactgc    | 185520   |
| gaaatggaag | ggcaaatgca   | aggggctcag   | agggcatggc   | cccttcacag   | gggaggggg    | 185580   |
| cgaggcttgg | g gagtagcagt | gacttgtctg   | ccgtcacaca   | gctggacagc   | agccccagcc   | 185640   |
| tctgaccca  | acgtgggctt   | : tttgaacagg | agcgtcaggo   | actctggáct   | gtgggggagg   | 185700   |
| gaccagggt  | g cccctgtgac | cccacaacto   | cgcccctaca   | gggaatgtcg   | gtccagctcc   | 185760   |
| acgtcccgta | a ctcagagcat | gccaaggcco   | cggtgggccc   | : tgtcaccatg | gggctgcccc   | 185820   |
| tgcccatgga | a ccccaaaaa  | g ctgggtaagg | g ctcctggccc | atccgtctgg   | gtggctcagg   | 185880   |
| ctgggctct  | g gctgtcctgt | gggtggggc    | g ggggaggaag | gggtatcttg   | gcccacggta   | 185940   |
| ctccaggtag | g cagctgggag | g gtcccccct  | agcagccctg   | g gctggaacat | ggtggggagg   | 186000   |
| ggcagcgct  | t cccagcccct | t ggctcaggti | gggtggggad   | aagcctccc    | g ggaccctgct | 186060   |
| ccggcagca  | c gtgactcgc  | t cctcttact  | g gtcctcagca | a cccttcagco | g gagtgaagca | 186120   |
| ggagcagct  | g tecceaegg  | g gccaggctg  | g gccaccgga  | g agcctggggg | g tgcccacago | 186180   |
| ccaggaggc  | g teegtgetg  | a gaggtgagg  | g cccttctgc  | c ctgggcccc  | agcatctgc    | 186240   |
| cctgttcct  | c gggtgccca  | a agggccctt  | t attcaaaac  | c tgctgggaaq | g tgtcatctc  | 186300   |
| cagagggtc  | t gggggcccc  | t cttcacagc  | t gtctccctc  | a ccatttagg  | g gtaggggga  | 186360   |
| tecetetge  | g ttgaaacaa  | c tagcacaac  | t tgtgggtct  | c tcagtcagg  | g tggctctca  | g 186420 |

| gactggggcc | tggggaagga   | agggccacag   | acacgccctc   | agccccacat   | cttgtgtctt : | 186480 |
|------------|--------------|--------------|--------------|--------------|--------------|--------|
| ccagggacag | ctctgggctc   | agttccgggc   | ggaagcatca   | ccaaaggcat   | tcccagcaca : | 186540 |
| cgggtgccct | cggacagcgc   | catcacatac   | cgcggctcca   | tcacccacgt   | aggtgtcctg   | 186600 |
|            | ggaaggacgg   |              |              |              |              |        |
| ttgtcaccaa | accattagcc   | tcagccgatg   | gggtgatgac   | tgggggacag   | cagttcactc   | 186720 |
| catgaacttt | catctagtct   | gcatggaatc   | aggcactggg   | attgccaagc   | acagctcaaa   | 186780 |
| actctgcctt | cagggagctg   | ccatgtagtg   | gaaggaaaca   | gaccagggta   | aataagtagg   | 186840 |
| ctggtgaaaa | ccgagcaggc   | aggcagaatg   | tgagcgtacc   | gcggctgaga   | atgcctggcc   | 186900 |
| acggacattg | cttagacagg   | tgaggaaggt   | gacatgtcag   | ctgtggccag   | aagaaattga   | 186960 |
| gggtgcaagc | catgcgggaa   | tctcagggaa   | cagcattcta   | ggctcaggga   | acagcatgtg   | 187020 |
| caaagacaga | gcatgagagg   | gttcctgaat   | cgtgccagga   | ctggtgcccc   | agccttgcag   | 187080 |
| ctggtgagct | gtggacccaa   | ggttttgtgc   | cacgtgtgtc   | tggctctaga   | acacagtgac   | 187140 |
| agagcgtggg | tccacacact   | tgcacacgtg   | catgcatgtt   | ctaacagtgg   | agcttcgggc   | 187200 |
| aacaagatgg | tccacaggga   | ggtgttttc    | actcaggcag   | cgtcaaatcc   | caccacagag   | 187260 |
| gagccattta | cactttgccc   | ttctctgaaa   | tctgcaggtt   | ttaaaaaatct  | gagctttcaa   | 187320 |
| aggcagctgt | gctgagtggg   | aagggcaagt   | gctttggaca   | aaagtcaggc   | tgagggccct   | 187380 |
| cgggtgccag | ctccaccacc   | tactcagaca   | ggcagcggcc   | tgccctgact   | ccgtttcccc   | 187440 |
| tttgctaaca | gtattcctgg   | gagagtcatt   | ctcctgaagt   | cgtagggacc   | tttgaagttc   | 187500 |
| ccaggcatco | acctgctctg   | ggttcctgag   | tggccatgac   | ccgcgccctt   | cctcgaacct   | 187560 |
| cccagttaca | a cacatctctt | tgattgcttt   | tggcagacag   | ccagctgcca   | aaacatgtga   | 187620 |
| gataggcaag | g ggtcaaactt | ccgtgcagtc   | tcactaccag   | atagtgagga   | agtcagcgtg   | 187680 |
| tggcctgca  | gcacagagco   | gtttattaac   | : tgagtaggtg | ccataggcag   | ggaccacgtg   | 187740 |
| gttcccagct | ggcaagggag   | gtcaaggaag   | tcccagctcc   | ctgatcctcc   | agggacttcc   | 187800 |
| tgcccatct  | t gggagtagag | ttcattgggg   | ccaagagcaa   | gaggctacag   | gctcatctcc   | 187860 |
| tggaagcag  | a cgttatgcaa | acagaagctt   | ccctgttaat   | gggagtttgt   | ccagtgtatt   | 187920 |
| ctcccaaga  | g caggggccad | c cggctggatt | tetgttetet   | gtccatgtcc   | ctgaagatgg   | 187980 |
| cacctctaa  | a atactatago | c tcaaaaacat | : caagctggac | acggtggctc   | : ttgcctgtca | 188040 |
| acccagcat  | t ttgggaggc  | aaggtgggag   | g gatagettga | a gcccaggagt | : ttgagaccag | 188100 |
| cctggacaa  | a aagaggcct  | g tctctacaga | a aaatttaaaa | a attggctggg | g catggtggca | 188160 |
|            | a gtctcagct  |              |              |              |              |        |
|            | g cagtgaact  |              |              |              |              |        |
|            | a aaaaaaaaa  |              |              |              |              |        |
|            | a ttgtggtgt  |              |              |              |              |        |
|            | t ctgatgtta  |              |              |              |              |        |
|            | t tttcccgcc  |              |              |              |              |        |
| ggctgcccc  | g agctgtcac  | c tgactcagc  |              |              | a gtgtacaggt | 188580 |
|            |              |              | P            | age 130      |              |        |

gtcttaaagc acagcaggga gatgctgctc agagtatttg ctttgggaag tttgggggga 188640 gctcatcaga attcagggcg tcttgctgtt gccctccgca aagaccagga tctgcggtga 188700 actececggg gtaccaggtg etgecetetg ecaggggatg tececageca ageaagteca 188760 gccagagact cagagctcac tggtccaggt cttgggatat agtaggacct ttaccgttga 188820 atctgctcct ggaaccctag aaagagaaga gggatattga gatttgggga cccgtcgtct 188880 gtgccagatg cctttgagaa tcatcaatgc agaaggtctc catttgtgga tgtgcaaact 188940 gaggeteaga aaggaggtee eaeggeaget tggtagtaaa gttgetgttt gaeaeceaae 189000 attotgotto caaagtoata ttotaactot gatgottgtg ttottgaaag toacccaagg 189060 caggatgctg ccccacgtgg ccatctcctc tctgcttgaa cacatcctcc aacgggaagc 189120 tcattcccta tatggcagtg gttctcaatt gggggaaatt gtgcctccaa ctctctaggg 189180 acattttcga ttgtcctaac ttggtggggg acacactggg gaggcgtgta ctcctggctt 189240 ctagtgettt gaagccaggg atgetgttaa cagcccacag tgcacaggac agccccacag 189300 caaagaaggg tccagctcca gctgtcagga gggccgaggt ggaaaacctg ggttagaact 189360 aaaatttccg gtgtgctgcc ctgacgtgag tccttgtcct ggttttagga aaccaaagtg 189420 catgacgtgg tcacgggtac agcacaggag cagaaacccc agcgtccccg ccagttaccg 189480 ttttcggtaa ctgaatgtca aggctctgag tagaccccac gcagtggtgg ggacacagac 189540 tccaggacca gaatgcctgg gttcaagtcc ccgcctgccc cttattagcc aggtgacccc 189600 gggtaaagtc actgtgcctc cctgtgcctc ggtttcccca tctgaaacag gcataatcaa 189660 tagggttgtc ttagggttgt ttcgaggatt aaatgagcaa atccatagag agcacccaga 189720 acagegteca eteatgggaa geaettgaca agggatette attetteagg tteeteatag 189780 ggttttgttc catgcaaact cttacctatt tgagacagtg tgtgtgtgga cacgcgtgtg 189840 catcggtggg cacatgggct tttaagcacg tctttgcctg catttgagtt gagaggggtc 189900 ctgggctgca gcctcctggg cgctcacccc tctgcacctg cagggcacgc cagctgacgt 189960 cctgtacaag ggcaccatca ccaggatcat cggcgaggac agcccgagtc gcttggaccg 190020 cggccgggag gacagcctgc ccaagggcca cgtcatctac gaaggcaaga agggccacgt 190080 cttgtcctat gagggtgagt cgcaggagga gaggaggccc aggaccaggg gaggagtgtg 190140 cttggcccac tgaggtagct tcacagggag gcagggctgg attgacatca gaaagcacaa 190200 tetgataggt ggtgacetee ttatecetge aggtatgeaa gecageagea gggaagegtt 190260 ggccttagct gcctcccacc tctgcccagt tctttacagt ttagaaaaca aactcatggc 190320 caaccttttt agaagcatag gagggaaact gaggcccgga acagaagccc gagctcacgc 190380 cgccaggcct ccagcaccgt actgacaaac cacgcactct ctcattggcc atgaaagagg 190440 ccatggccag agtgcccctc gccccactgt gtcccaggct cttgctgcgg agcccccatc 190500 ctctccctct ctaggctctg ggttccagaa cgaggagacc ctgccaggaa ggagttaagg 190560 gaatcgagtg ccgggaaaga gaatttcctg gcagcctagg gcacccaggg gtgtggagat 190620 gaaagetget aatgggegee teteteagea etgeagetge gaggeeegga attgeetete 190680

| C | ctccatccac | ttccgcctgt   | gcccgcagcc  | ccctccccag | gcctgggagg | tggaggtggc : | 190740 |
|---|------------|--------------|-------------|------------|------------|--------------|--------|
| ĕ | accgtgtggc | ttaggaacat   | aatgcactcc  | ctgctgccac | agagatagcc | ttggagacag : | 190800 |
| ç | gcctgcagct | gtgtcttggg   | tgccagctca  | tgccctggtg | ccctggacc  | gagtgccctg   | 190860 |
| ç | ggggtggcgg | gaagcctggg   | aagggctggt  | ggtggggtta | gtcaagagct | tgtcttgaga   | 190920 |
| 9 | ggtcactggg | tagagtccca   | ccttgggacc  | ccagaccagt | gcctgagcct | ttataggcct   | 190980 |
| 1 | tcagcgtatc | gtcttcatca   | tgggtttcag  | tcggggcctt | taaactctcg | tctgctccct   | 191040 |
| 1 | gggccaggta | ggcagtgcag   | gcagcggcag  | gtgtgagact | gtagggagtg | gggaggactg   | 191100 |
|   |            | ggaggactgt   |             |            |            |              |        |
|   |            | tctcatctcc   |             |            |            |              |        |
|   |            | cgttttctga   |             |            |            |              |        |
|   |            | cgtgggccac   |             |            |            |              |        |
|   |            | tgaggggtgg   |             |            |            |              |        |
|   |            | ggaaggagag   |             |            |            |              |        |
|   | gccacctccg | tctgttcacc   | tctctgcctg  | tccggggagc | agtgagccgg | gcccatgtag   | 191520 |
|   | gctcctttgg | cctggcgagg   | ccacccctgc  | cacccctcac | cactgcctgc | aacacacacc   | 191580 |
|   | tctccgtgca | cacgcagact   | tgtggtcgga  | cactcacatg | cacatcggca | caggtttctg   | 191640 |
|   |            | gtgtatacat   |             |            |            |              |        |
|   |            | cttagttctc   |             |            |            |              |        |
|   |            | acccgtgcca   |             |            |            |              |        |
|   |            | cggtgcacac   |             |            |            |              |        |
|   |            | gctgctgcct   |             |            |            |              |        |
|   |            | cctgccacac   |             |            |            |              |        |
|   |            | ttcacgcccc   |             |            |            |              |        |
|   |            | aggcacaccc   |             |            |            |              |        |
|   |            | cgtgccctgc   |             |            |            |              |        |
|   |            | ccccagggc    |             |            |            |              |        |
|   |            | ggggccagca   |             |            |            |              |        |
|   |            | accgtggtcc   |             |            |            |              |        |
| 1 |            | g catgtctgtc |             |            |            |              |        |
|   |            | a gacggccgcc |             |            |            |              |        |
|   |            | c ctcagccago |             |            |            |              |        |
|   |            | g ggcggtggg  |             |            |            |              |        |
|   |            | g aggctccato |             |            |            |              |        |
|   |            | c gtggggatga |             |            |            |              |        |
|   |            | a gggagccac  |             |            |            |              |        |
|   | cgtgccatc  | c cgccggagc  | g acacagece |            |            | a ccacatccgo | 192840 |
|   |            |              |             | P          | age 132    |              |        |

gggtccatca cacaaggtac tgccctgttc cctgctccct cgttgccccc aacgggtgta 192900 cagtcacgca gggcgcggga gggagagaca cagccagagt gtggtgggaa ctcaggacaa 192960 gtatgcagaa aggcctgcag cacacatgta catgatcagt acgtgagcta cggagcaagg 193020 gtgtctctta cttatttcaa aacaaaaaca aaaagcaaaa taccaccgat cacccctgtg 193080 cttttaggtg tcacatagca actgtcctgt gcttggcact aacccaggtg ccacctgcgt 193140 atcgttttac agaacatcct ggtgaggcac atgcgattgg gagaggcttg gagagctccg 193200 agaactettt caggtteteg eggetggtee atggeacage cagetactgt gaacttggea 193260 gctttgtggg ttttattttt tatttttta ttttgttgtt gttgttgctg tttgagacag 193320, ggtctcattc tgttgcccag gctggagtgc agtggcacga tctcagctca ctgcagcctc 193380 cgcctttcag gcttaaacaa tcctcccact tcagcctccc aagtagctgg gaccacagat 193440 gcacaccacc acatctagct aatttttgta tttttgtaga ggtggggttt caccatgttg 193500 eccaggetgg tetegaacte etgageteaa getgtetgee tgeegeagee ecceagagtg 193560 ttgggattac aggcgtgagc tactgcaccc agcctgtggt tttagcttca tgatttcata 193620 gtgttcccga cttgctgagg tggttcagtt aatattcttg ttttatgtgt gaagaagctg 193680 aggcccagag aggtcagatt tcctggtcaa ggtcacacag caagtgggga tttgaactca 193740 ggcagactag ctccagaacc cactggtgtg gaggctcttg atgggtctgg gtggggcggg 193800 gcgtgagggt cagtgctgtc ggcccggcag ggatccctcg gtcctacgtg gaggcacagg 193860 aggactacct gcgtcgggag gccaagctcc taaagcggga gggcacgcct ccgccccac 193920 cgccctcacg ggacctgacc gaggcctaca agacgcaggc cctgggcccc ctgaagctga 193980 agccggccca tgagggcctg gtggccacgg tgaaggaggc gggccgctcc atccatgaga 194040 tecegegega ggagetgegg caeaegeeeg agetgeeeet ggeeeegegg eegeteaagg 194100 agggctccat cacgcaggta tggcccaggg ccaggcacac gggcccagtt ctaggagggg 194160 tggcggtggc tgtggggcac tgccctgggc ctctccacat ggggaaaccg aggctgagag 194220 ccctcgcgta ccttacagtc acccagctgc tcatcaccgg gcctcagctg tgcgtgttcc 194280 agggetgcgc agggggcacc aggetectga cetgatteta etgaacteac attgttecca 194340 ttcttcaggg agggaaactg agtcccagag aggccaggca ggcttccaag gccacaggac 194400 taaacatagt gacgagtaac tgcctccgtt gaatctttgt gagggtccag gtgcggcctg 194460 aggatgttgc atgcgttcat tgtttcaccc cctagcaatg ctctgaggtc gttttcttaa 194520 tgaccttatt ttattgctga gtaaattgag gttcagagag gttcaacgac tcacccagag 194580 tcacgcagca aatgcagttg tgaaacccaa attcagatgt tcctacagcc gcagcatcca 194640 ctgcacccac cagcaggttg caccacaaga ggccccagtc cccccaggcg gccccagctc 194700 agtaggggaa gttccgtgcc gatggtacga ggacgaggag ctgttcggtg gaaagcccct 194760 gaaggccact gtccttccac atgggcagag gtggcctctt gtgaagggga aggagaatgg 194820 gagccaccac ggggctgtgg ggctgtgagg cggaaggact ggggtgggtg tcccgggagg 194880 ggttccagct tgtaggaagg ttttgaagcc agggagaagg cagaagcagt aagatccctg 194940

| attoccagoo | gaagggtttg | gctctcagcc   | cctaggcaat | tatggagtcc | ttggaagcat | 195000 |
|------------|------------|--------------|------------|------------|------------|--------|
|            |            | ggtccagatt   |            |            |            |        |
|            |            | atgaagacat   |            |            |            |        |
|            |            | agtgtctccg   |            |            |            |        |
|            |            | cagtctggac   |            |            |            |        |
|            |            | tcagccctga   |            |            |            |        |
|            |            | ggtgctgact   |            |            |            |        |
|            |            | gaatgttttt   |            |            |            |        |
|            |            | agagagccca   |            |            |            |        |
|            |            | gtcccccag    |            |            |            |        |
|            |            | aagtgtgcca   |            |            |            |        |
|            |            | gtcacttcca   |            |            |            |        |
|            |            | tgggctatgg   |            |            |            |        |
|            |            | caagtacgac   |            |            |            |        |
|            |            | cggcagcccc   |            |            |            |        |
|            |            | ggcactggaa   |            |            |            |        |
|            |            | ctcggggggc   |            |            |            |        |
|            |            | gcagagcccc   |            |            |            |        |
|            |            | ttcgcccgtg   |            |            |            |        |
|            |            | tgggcgtgag   |            |            |            |        |
|            |            | ttagtttgca   |            |            |            |        |
|            |            | gcccgtgggc   |            |            |            |        |
|            |            | ccgtggtgtc   |            |            |            |        |
|            |            | caaacagcta   |            |            |            |        |
|            |            | : catccttcta |            |            |            |        |
|            |            | : ctgcctgcct |            |            |            |        |
|            |            | ctttctctt    |            |            |            |        |
|            |            | : tgcgtggctc |            |            |            |        |
|            |            | ttctttccat   |            |            |            |        |
|            |            | , accccctato |            |            |            |        |
|            |            | catggtggct   |            |            |            |        |
|            |            | g aggtcaggag |            |            |            |        |
|            |            | a caaaaaaata |            |            |            |        |
|            |            | g gcaggagaat |            |            |            |        |
|            |            | g cactccagco |            |            |            |        |
|            |            | a aaattttctt |            |            |            |        |
|            |            |              |            | age 134    |            |        |

|            |              | -           | -            |              | gctgggattt : |        |
|------------|--------------|-------------|--------------|--------------|--------------|--------|
| ctgtttcgtt | cactggggtg   | accccagttc  | tcacaacaat   | gcttgccacg   | tagtagaggc : | 197220 |
| tgcatcaata | ttttttaatt   | gattgagtga  | gtgaatggat   | gaaagaatga   | attttttaaa : | 197280 |
| aactataaca | caaaagcaaa   | tgagtcagtg  | agcaaaaagt   | gaactaaggc   | aatgaagaaa : | 197340 |
| tgaaggagtg | aatgaagaga   | cctggtcctt  | gggatcccga   | ggtccctatc   | ctcaaacaac   | 197400 |
| tccccgtaaa | tgccagcccc   | agaggcccga  | tgcatccacc   | ttgcccgtcc   | acaggcagcc   | 197460 |
| tttcgtccag | caaggcatcc   | caggaccgaa  | agctgacgtc   | gacgcctcgt   | gagatcgcca   | 197520 |
| agtccccgca | cagcaccgtg   | cccgagcacc  | acccacaccc   | catctcgccc   | tatgagcacc   | 197580 |
| tgcttcgggg | cgtgagtggc   | gtggacctgt  | atcgcagcca   | catccccctg   | gccttcgacc   | 197640 |
| ccacctccat | accccgcggc   | atccctctgg  | acgcaggtga   | ttgccctggg   | gctcccagaa   | 197700 |
| ccctgcagtg | gtgctgaaca   | gggccacgga  | cctcatcagt   | gttcgctcag   | ggactcctta   | 197760 |
| ggcatcaact | gtcaggttcc   | cctggatggc  | gaaactgagg   | cctcgggatt   | ggaagaccca   | 197820 |
| acagtgtaat | catgagctta   | ggttggagca  | gaatttctct   | tagtagtttg   | caggacatgt   | 197880 |
| ggggttaaac | atttcagtgg   | ttttctttc   | cggcaggact   | tatcagtgcc   | tttagcaatg   | 197940 |
| caaaggtata | gaatgaggac   | ttgagtatat  | gcatttttca   | aatagacatg   | atctgaaagt   | 198000 |
| ctttttaaa  | agttgccggg   | cacggtggct  | cacacctgta   | atcccagcac   | tttgggaggc   | 198060 |
| cgaggcaggc | ggatcacaag   | gtcaggagat  | agagaccatc   | ctggctaaca   | cggtgaaacc   | 198120 |
| ccgtccctac | taaaaataca   | aaaactagcc  | gggtgtggtg   | gcgggcgcct   | gtagtcccag   | 198180 |
| ctactcggga | ggctgaggca   | ggagaatggc  | gtgaacccgg   | gaggcggagc   | ttgcagtgag   | 198240 |
| ccaagatcgc | gccactgcac   | tccagcctgg  | gcgacagagc   | gagactcctt   | ctctaaaaat   | 198300 |
| aaaagaaatt | : aaaaaaaaag | aaataaaaaa  | agttgcatcc   | ctttggagtg   | ttaatctgca   | 198360 |
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|            |              |             |              |              | cccctctgcc   |        |
|            |              |             |              |              | tacccgcacc   |        |
|            |              |             |              |              | aaccggcaga   |        |
|            |              |             |              |              | accgccatgg   |        |
|            |              |             |              |              | gcactcaact   |        |
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|            |              |             |              |              | , tgctgtgggt |        |
|            |              |             |              |              | tcctcagtgg   |        |
|            |              |             |              |              | : aaagatcaaa |        |
| atgtggccg  | g gcacagtgg  | c tcatgcctg | t aatcccagca | a cttggggagg | g gcgaggcagg | 199200 |

| tggataacaa | ggtcagaagt   | tcgagaccag   | tctgaccaac   | atggtgaaac | ccgtctctcc 1 | 199260 |
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|            |              |              | atgcgcacct   |            |              |        |
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|            |              |              | aagactgtgt   |            |              |        |
|            |              |              | tttgccttgt   |            |              |        |
|            |              |              | aatgcttctg   |            |              |        |
|            |              |              | taagtatttt   |            |              |        |
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| cagtgagggc | agctgcagga   | gatgccccgg   | ctcgggcttg   | ggagcagaag | aggaggtggt   | 199740 |
| accgagagaa | cctgagcatt   | cagaaaaggg   | ttccatggct   | ggtgctggga | gccgaggagg   | 199800 |
| gagtgcctgc | caccagctct   | gctggctcca   | ggagtgtgtg   | ccgtgctctc | caggagggtg   | 199860 |
| atctggccgg | tgggcagcct   | ggcctctctc   | ctccctgtgg   | ctacagccct | ggcccaacac   | 199920 |
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| ccttcagcag | ccgccacago   | agctccccac   | tctccccagg   | tagcgccact | gcccagtctg   | 200100 |
| gggtggggac | cccggcatcc   | atgggaggcg   | gctgggggat   | gggcgggcag | aagccctgct   | 200160 |
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| gcctttgggt | ttcctaggag   | gtccaacaca   | cttgacaaaa   | ccaaccacca | cgtcctcgtc   | 200280 |
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| cactgactg  | caccaggtad   | agagcagago   | agcggcagca   | gcggcggggg | tgggggcagc   | 200520 |
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| gaggtatat  | g ggaggtggg  | t gggtgggca  | g atgtgtgggg | gtagaagaat | agactatgtg   | 200820 |
|            |              |              | a ggtgggtgtg |            |              |        |
|            |              |              | t gggggggtgg |            |              |        |
|            |              |              | g ctggttggat |            |              |        |
|            |              |              | g gccgggttag |            |              |        |
|            |              |              | a tggttaggti |            |              |        |
|            |              |              | a ggtgggtgg  |            |              |        |
|            |              |              | c acgttaggt  |            |              |        |
|            |              |              | g ggtgggtgg  |            |              |        |
| ggtaggtaa  | a aacccctnr  | n nnnnnnnn   | תתתתתתתתת ת  |            | n nnnnnnnnr  | 201360 |
|            |              |              | P            | age 136    |              |        |

cactttgctg aatccagaaa cactgatgca agaggtgggt ttccatggcc ttaggaagct 201480 ccacctctgt ggctttgcag agtacagccc cctcctgcct gctttcatgg gctggcattg 201540 agtgtctgcc acttttccag gcacatggtg caagctgtca atggagctac cattctgggg 201600 tttggagaac aatggccctc ttctcacagc ttcactagtc cctaactggg gactctgttt 201660 gggggctctg actctacatt tcccttctgc actgccctaa caaaggttct ccatgagggc 201720 totgoccotg cagcaaactt otgoctggat atootggcat ttocatacat coactgatat 201780 ctaggetgag gattcaaatc cacaactett atgetetgtg catetgeagg ettaacacca 201840 catgaaagcc actaagtctt atggctgaca ccctatcgag cagtgggtta acatatatct 201900 ggagcccttt tagctacaac tggcacttga gtggctggga cacagggagc aatgtcccat 201960 ggatgtgcag ggcagcaggt ccctgggcat ggacaatgaa accattcttc tctccaagac 202020 ctctgggctt gtgatgggag gggctgctac aaagttctct gaaatacttt caaggcattt 202080 teceacattg tettggetat taacatteag caatgttaca tatgcaaatt tetgtagatg 202140 gcttgaatta ctcccataaa atggggtatt cttttctagt gcatggacag actgcaaata 202200 ttctaaactt ttatgccctg cttccccttt aaatataact ctcagtttca gacatctcat 202260 tgctcacaca tatgaccata tgctgttaga agcatccagg cgacatcttc aatgctttgc 202320 tgctcagtgt gtgggggtgt actacaatac attcatgctt atatacaatg catttgaggt 202380 tgaggcatgt aaaaatacta aggcactgtg tgtatgttgt ttgtgcatga tactgtaact 202440 ccttgtctct gaaaacagta caaggaacag gatgtgtgat aaggagtgct gaagacagca 202500 tcctaagaat gtggttgatg cttcagatga ataaataagt ccatatgacc tcatgcctgc 202560 ccccaaatag ccacctgttg atgaattata atctnnnnnn nnnnnnnnn nnnnnnnnn 202620 nnnnnnnnn nnnngttagt getteettea ggatetettg taeggeagge etgttggtet 202740 gctggatgtg aaattctgag tagaaaatta ttttctttaa gaatcttaaa tattgccccc 202860 cactgttttc tgactcatag ggtttctgca gagagatccg ctgttagtct gatgagcttc 202920 cettgtgggt aacctgacct ttetetetgg etgetettaa cetttttee tttatteaa 202980 ctttggtgaa tctgatgatt atgtgtcttg ggttaccctt ctctaggagt gtctttgtgg 203040 tgttctctgt atttcccgaa tttgaatttt ggcctgtctt gctaggttgg ggaagttctc 203100 ctggataata tcctgaagag tgttttccaa cttgcttcca ttctccccat cacttttcag 203160 gtacaccaag caaatgtaga tttggtettt teacatagte eeatatttet tggaggettt 203220 gttctttcct tttcattctt ttttctctaa tcttgttttc acattttatt tcattaattt 203280 gatetteagt egetgatate etttetteea ettgattgat ttggetattg acaettgtgt 203340 atacttcacg aagttctcat gctgtgtttt tcagctctat caagtcattt attctctact 203400 ccaaactggt tattctagtt agcaatttat ttaatctttt ttcaaggttc ttagcttcct 203460

| tgcattgggt | tagaacatgc  | tcctttagct  | cagaggagtt  | tgttattacc             | caccttctga 2 | 203520 |
|------------|-------------|-------------|-------------|------------------------|--------------|--------|
|            |             |             |             |                        | cttgctggcg 2 |        |
|            |             |             |             |                        | tcagtctttt 2 |        |
|            |             |             |             |                        | tgttggtgac 2 |        |
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|            |             |             |             |                        | agtttgctgg   |        |
|            |             |             |             | •                      | aacaacaaag   |        |
| attgctgcct | gttccttcct  | ctgcaagctt  | cttcccagag  | ggacacccac             | cagctgccag   | 203940 |
| ccggagctct | tttgtatgag  | gtgtctgttg  | gccccactg   | ggaggtgtct             | cccagtcagg   | 204000 |
| caatgtgggg | tcaggacccg  | cttggaggag  | gcagtctgtg  | atgaactatt             | ctcannnnnn   | 204060 |
| nnnnnnnnn  | nnnnnnnnn   | nnnnnnnn    | nnnnnnnnn   | nnnnnnnnn              | nnnnnnnn     | 204120 |
| nnnnnnnnn  | nnnnnnnnn   | nnnnnnnn    | nnnnctccct  | cctcagcctc             | cagagtagct   | 204180 |
| ggactacagt | gtgcaccaca  | atgaccagcc  | aatttccttg  | atatttttt              | aagagatggg   | 204240 |
| atcttactac | gtggtacagg  | cctcagcctc  | ccaagtagct  | gggattatag             | gtaagagcca   | 204300 |
| ccacacccag | cccaaattag  | attgtttcta  | aagagatatt  | ctgaccacgc             | ctttaaatat   | 204360 |
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|            |             |             |             |                        | taccttgtga   |        |
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|            |             |             |             |                        | , ttccacacac |        |
|            |             |             |             |                        | g cattgtttct |        |
|            |             |             |             |                        | a ctcaccacca |        |
|            |             |             |             |                        | a tgaagctttc |        |
|            |             |             |             |                        | tgtannnnn    |        |
|            |             |             |             |                        | nnnnnnnnn    |        |
|            |             |             |             |                        | g gtggtggcgt |        |
|            |             |             |             |                        | t gtgaaggaaa |        |
|            |             |             |             |                        | a gacgctggct |        |
|            |             |             |             |                        | t gggtgagagt |        |
| atagatggo  | t gggttagct | g ggtgggtgg | g tggatgggt | g ggtggtagg<br>age 138 | g ttaggtggat | 205620 |
|            |             |             | P           | age 130                |              |        |

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| ccatccagga | actggaactc  | cgttctctgg   | gtaagaccac | cctgacagcg | gccaccttca  | 207780   |
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| ggagggctcg | ggcctacgcc  | cccacctgcc,  | ggctgcctgg | atgctgtcgg | actgggggaa  | 208260   |
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| gagccctctg | cctctggacc  | cctgccttgg   | ccctagttca | tggctcctct | ctgttggact  | 208440   |
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| acccccactt | ctcactccgc  | cccacacact   | ccttccccag | agacccatgc | tgcccccatc  | 208560   |
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|            |             | agtgaggacc   |            |            |             |          |
|            |             | g gaattggctg |            |            |             |          |
|            |             | g gggccagcag |            |            |             |          |
|            |             | g gggaggccgc |            |            |             |          |
|            |             | c cgctgctcca |            |            |             |          |
|            |             | c acatcagtgt |            |            |             |          |
|            |             | a ggcctggaga |            |            |             |          |
|            |             | a tccagggcat |            |            |             |          |
|            |             | g agcaccggca |            |            |             |          |
|            |             | g catcttcac  |            |            |             |          |
|            |             | t ctcatcagc  |            |            |             |          |
|            |             | c acactggga  |            |            |             |          |
|            |             | g ccccaccca  |            |            |             |          |
| cccaccccc  | a gaaggttct | g tcaggagag  |            |            | c cccacttgc | c 209880 |
|            |             |              | P          | age 140    |             |          |

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| cgcgcgcaca | cacacatgca   | cacccgcaca   | catgcgcaca   | cacacatgca   | cacccgcaca   | 210660 |
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| ctcccacccc | cgccccacc    | cccaccctgg   | tgaaccgtgg   | ggcctctggg   | ggtcaaaaga   | 210780 |
| gaaagagagg | ggagggccct   | gagctccagg   | gtgaaggagg   | cgttttggtg   | ggggcggggg   | 210840 |
| gggtaatgtg | tgtgcgagga   | cagacatggc   | aagacagcag   | gacatctttg   | gggggcagtg   | 210900 |
| gtgtagctgg | cactggggta   | caaccagaat   | tcagagcagg   | ggtcaataaa   | ctgtggccca   | 210960 |
| tgggccagat | ctagcccggg   | ccctctgttt   | gtacaattca   | tgaactaaaa   | aaatgatttt   | 211020 |
| acatttttaa | agggttgttt   | aaaaaaaaa    | taaaaatgat   | aacgatacat   | gccagagatt   | 211080 |
| acttgtggtc | gaaaatgcct   | aaaacgttta   | tgatttggcc   | acgtacagga   | aaagcgtgtg   | 211140 |
| gggccctggt | ttagagtgga   | gggagggtgc   | gcccctcag    | tagggagacc   | tctgaccaca   | 211200 |
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|            |              |              | ccggagggca   |              |              |        |
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|            |              |              | c ttgagagggt |              |              |        |
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